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July · 1955

finish

THE MAGAZINE OF

Appliance AND Metal Products MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

FORD'S CENTRAL STAFF OFFICE BUILDING USES *90,000* square feet of Porcelain Enamel

Architect: Skidmore, Owings & Merrill, New York

General Builder: Bryant & Detwiler Co., Detroit

COLOR *by "Ceramic"*

Whether Your Order is Large or Small . . . CALL "CERAMIC" for Fast Service on Dependable Colors, Chemicals, and Supplies for Enamel, Glass, and Pottery.

A striking example of the colorful beauty of porcelain enamel curtain wall construction is seen in the new Central Staff Office Building of the Ford Motor Company. Over 7500 spandrel panels, the largest of which are 4'6½" by 3'9½", are enameled, laminated to a ¼-inch honeycomb, insulated with Foamglas, and assembled ready for installation by Ingram Richardson in Beaver Falls, Pa. The installation is the greatest known application of porcelain enamel in a single building.

The panels are enameled in a rich deep green-blue . . . a lifetime finish, non-fading, scratch-resistant, easy to clean, of enduring beauty.

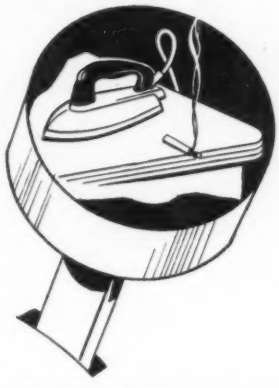
Color is furnished by "Ceramic."

CERAMIC COLORS TRADE MARK

CERAMIC COLOR & CHEMICAL MFG. CO.
New Brighton, Pa., U.S.A.

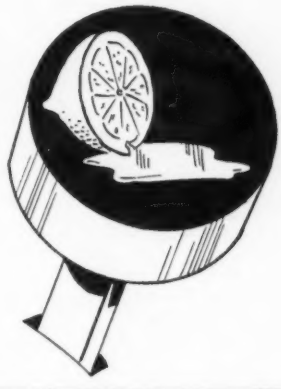
Why Porcelain Enamel puts more SELL INTO YOUR PRODUCTS

A porcelain enameled finish on your products offers so many unusual advantages that it **stands out** as a sales-aid in comparison with other finishes. And no wonder! What other finish can compare with all these features:



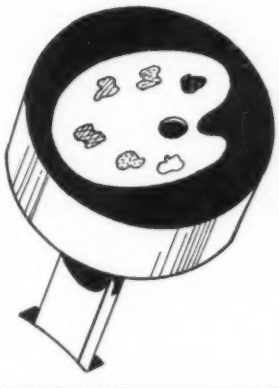
HEAT-RESISTANT

Forgotten cigarettes or even hot irons don't harm its hard, glossy surface. Since it is processed at 1550 F, porcelain enamel will withstand any temperature it is likely to encounter in home service.



RESISTS ACIDS

Acid-resisting porcelain enamel is not damaged by fruit juices or chemicals commonly used in the home.



COLOR PERMANENCE

Porcelain enamel never "fades out." It can be supplied in any color and in any variations of shades.

EASY TO CLEAN

There are no tiny surface pores in porcelain enamel to collect dirt and moisture. So dirt and stains are easy to wipe off.

Of course, the metal beneath the porcelain emanel surface must have excellent bonding qualities, flatness, and uniform fabricating characteristics. That's why more manufacturers have used more Armco Enameling Iron over a longer period than any other enameling base. That is why too it has become known as the "World's Standard Enameling Iron."

Armco Steel Corporation

4974 CURTIS STREET, MIDDLETOWN, OHIO

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SHEFFIELD STEEL • ARMCO DRAINAGE & METAL PRODUCTS, INC • THE ARMCO INTERNATIONAL CORPORATION

NEW

MONARCH'S

complete manufacturing service . . . from . . . BLUEPRINT TO SHIPPING CARTON

Monco Speedster designed, manufactured and packaged by New Monarch.

Starting from design, we develop your product from blueprint straight through to the shipping carton, including model making, dies, tools, fixtures, stampings, welding, assembling, finishing and packing for shipment. Tooling for economical, long run production is a specialty in our 3 modern fully equipped plants, backed by our 45 years of diversified experience.

Send Blueprints For Estimates

WHEN YOU NEED STAMPINGS THINK OF MONARCH

NEW MONARCH MACHINE & STAMPING CO.
406 S. W. NINTH STREET DES MOINES 9, IOWA

July • 1955

VOL. 12 • NO. 7

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finish

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Established January 1944

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A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. Includes technical and practical information on plant facilities and manufacturing problems from raw metal to safe delivery of the finished product, with special emphasis on fabrication, metal preparation, metal finishing, assembly, and packaging and shipping.

Free controlled circulation to management, purchasing, engineering and key plant personnel in metal product manufacturing plants. To others, subscription price is $5.00 per year, domestic. To all other countries $8.00 per year (U.S. funds).

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METAL PRODUCTS MANUFACTURING

ROM RAW METAL TO FINISHED PRODUCT

LORD GALL LIBRARY

now. . . . another New Process SERVICE to ENAMELERS

central source of supply for cast iron enameling

RANGE GRATES

RANGE BURNERS

SERVICE-TO ENAMELERS tells in three words the story behind the growth of New Process D-Enameling Corporation. Management and production people alike have learned that D-Enameling is a profit maker—worth far more than the negligible effort involved in putting the damaged parts aside for shipment by truck or rail to our plant.

Now, New Process launches another special SERVICE TO ENAMELERS . . . wet process cast iron enameling! Now, New Process becomes a central source of supply with large volume-low cost production for this special work which relieves range plants from the nuisance of having to run these parts on a special shift. You'll be surprised how economically we can enamel grates, burners and other cast iron parts for you. Won't you give us the opportunity to quote?

New Process *D-Enameling* Corp.

Highland and New Haven Avenues • Aurora, Illinois

THESE INDUSTRY LEADERS KNOW FROM EXPERIENCE THAT D-ENAMELING TRANSFORMS SCRAP LOSS INTO PROFIT DOLLARS

THE CAUSTIC BATH

ARROW SIGN CO. • BRIGGS MANUFACTURING COMPANY • CAPITAL AIRLINES • CHALLENGE STAMPING & PORCELAIN CO. • CLEVELAND-TENNESSEE ENAMEL COMPANY • CLYDE PORCELAIN STEEL DIV. • CONLON-MOORE CORPORATION • CRIBBEN AND SEXTON COMPANY • CROWN STOVE WORKS • DWYER PRODUCTS CORPORATION • ESTATE HEATROLA DIVISION • FLORENCE STOVE COMPANY, Kankakee • GENERAL PORCELAIN ENAMELING AND MANUFACTURING COMPANY • GIBSON REFRIGERATOR COMPANY • GLOBE AMERICAN CORPORATION • GRAY & DUDLEY CO. • ICE COOLING APPLIANCE COPORATION • LAWNDALE ENAMELING CO. • A. J. LINDEMANN & HOVERSON COMPANY • MAGIC CHEF INC. • MALLEABLE IRON RANGE COMPANY • MAYTAG CO. • MURRAY CORP., Scranton • NORGE DIVISION, Effingham • NORGE DIVISION, Muskegon Heights • PRENTISS WABERS PRODUCTS CO. • GEO. D. ROPER CORPORATION • RHEEM MANUFACTURING CO. • SAMUEL STAMPING & ENAMELING CO. • A. O. SMITH CO. • THE ENAMEL PRODUCTS COMPANY • THOR CORPORATION • TYLER FIXTURE CORPORATION, Waxahachie.

CLEANING SPECIALISTS

give you a "brighter" outlook on life.

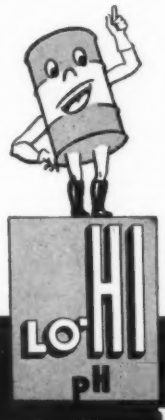
It's amazing how pleasant the view can be after one of these steel-nerved, sure-footed, alert Cleaning Specialists have done their job.

Northwest's Metal Cleaning Specialists are "alert" to your problems when it comes to giving your products a "brighter" outlook. Day in—day out, Northwest carries on the constant search for better, lower cost, analytically-correct cleaners to give you dependable, good looking, permanent finishes.

Remember —YOUR COST PER FINISHED ARTICLE IS THE TRUE COST OF YOUR CLEANER

From Northwest's years of experience in developing job-adjusted cleaners for your specific needs have come such processes as the LO-HI pH—for cleaning prior to plating, painting or vitreous enameling; ALKALUME—for preparing aluminum for finishing and spot welding; INTERLOX—for phosphate coating; SPRA-LUBE—to control over-spray of "today's" paints in water wash paint booths; PAINT STRIPPERS—specific to your needs; SUPER-DRAW & FLUID FILM—for drawing metals.

Northwest's production-tested chemicals and "Right-the-first-time" recommendations will save you money. Northwest Service is as close as your phone.



NORTHWEST CHEMICAL CO.

9310 ROSELAWN DETROIT 4, MICH.

pioneers in pH cleaning control *serving you since '32*

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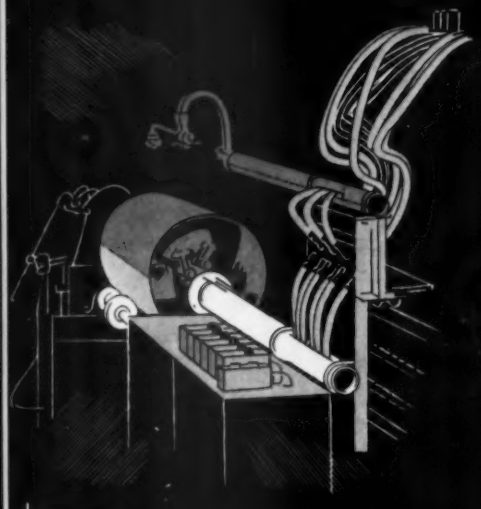
1920 1955

A business grown big through SERVICE

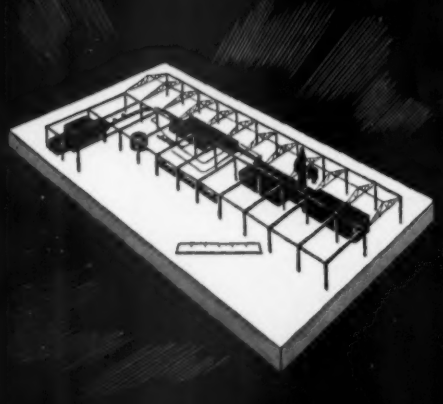


1945

Ferro develops first automatic spray equipment for water-heater tank interiors.

1955

Ferro builds first complete P.E. plant incorporating automation principles (for finishing water-heater tank interiors).



FERRO CORPORATION

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IN CANADA: FERRO ENAMELS, LTD., OAKVILLE, ONT.

MEETINGS

NATIONAL HOUSEWARES SHOW

National Housewares and Home Appliance Manufacturers Exhibit, Auditorium, Atlantic City, July 11-15.

HOME LAUNDRY SUMMER MEETING

American Home Laundry Manufacturers' Association, summer meeting, The Homestead, Hot Springs, Virginia, July 17-19.

ENAMELERS SHOP FORUM

Porcelain Enamel Institute, annual shop practice forum, Ohio State University, September 14-16.

PACKAGING-HANDLING SHOW

Society of Industrial Packaging and Materials Handling Engineers, annual packaging and materials handling show, Kingsbridge Armory, New York City, September 20-22.

TRIPLE PRODUCTION SHOW

Metalworking Machinery and Equipment Exposition, The Coliseum, Chicago, September 6-16.

Production Engineering Show, Navy Pier, Chicago, September 6-16.

Machine Tool Show, International Amphitheatre, Chicago, September 6-16.

PAINT FEDERATION MEETING

Federation of Paint and Varnish Production Clubs, annual meeting and show, Hotel Statler, New York City, October 3-5.

WORLD PLASTICS FAIR

World Plastics Fair and Trade Exposition, National Guard Armory, Exposition Park, Los Angeles, October 5-9.

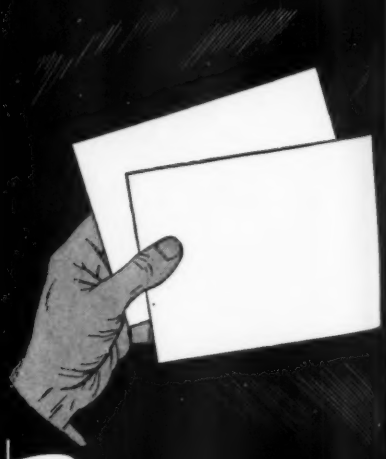
AGA CONVENTION

American Gas Association, annual meeting, Los Angeles, October 17-19.

FERRO

1920 1955

A business grown big through SERV



1947

Ferro perfects system for controlling of white in Titanium Porcelain enam

1955

Ferro "Quality Checks" on productio of Titanium frits simplify "color matc in customers' plants.

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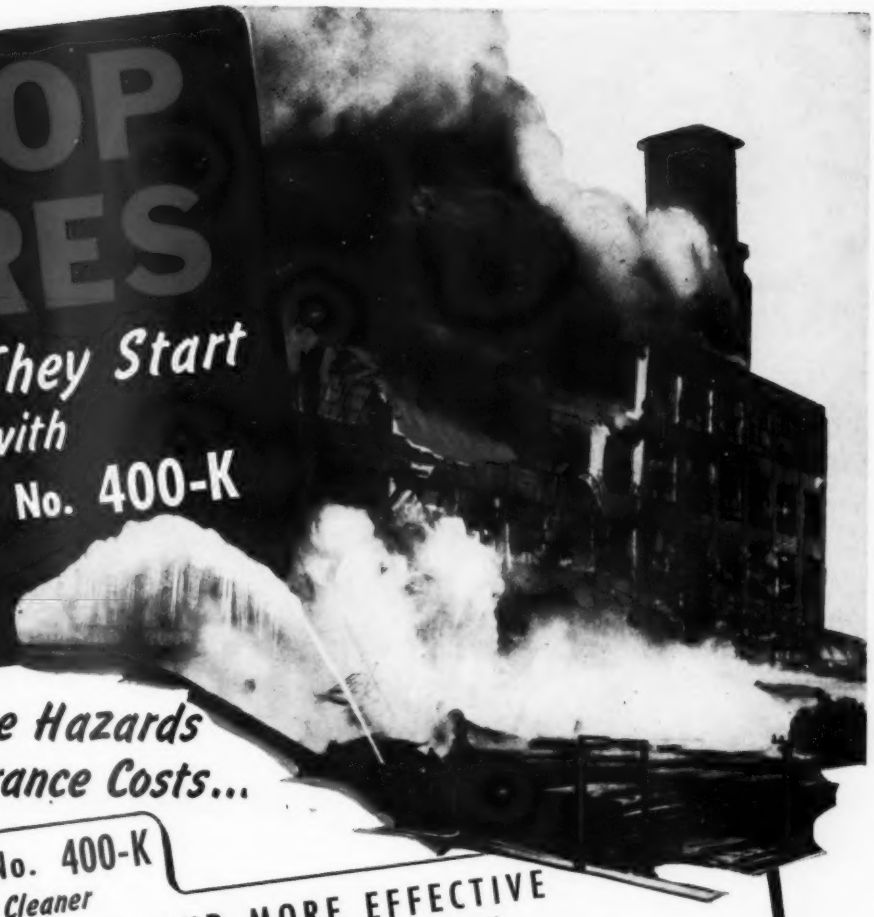
STOP FIRES

Before They Start with

MACCO No. 400-K

Safety Cleaner



Eliminates Fire Hazards
Reduces Insurance Costs...

MACCO No. 400-K
Safety Cleaner
... NEW, SAFE AND MORE EFFECTIVE THAN INFLAMMABLE CLEANERS

Macco 400-K is rapidly replacing the dangerous, old-type cleaners, such as

KEROSENE **STODDARD SOLVENT**
NAPHTHA **MINERAL SPIRITS**
GASOLINE **BENZINE**

If you are using any of these hazardous materials for the cleaning of dies, machines, tools, floors, etc., you are in constant danger of flash fires that so often prove costly and tragic.

Using Macco 400-K in your plant is actually a better fire protection than your insurance policy. It stops fires BEFORE they start—saves the loss of many man hours of time—prevents damage to plant and equipment and even loss of life. Macco 400-K is truly indispensable in all progressive metal-working plants where safety, economy and efficiency are the watchwords.

Order your supply today. Prevent that dangerous flash fire that may occur tomorrow. Write or phone your Macco Sales Engineer for a Macco 400-K demonstration. No obligation.

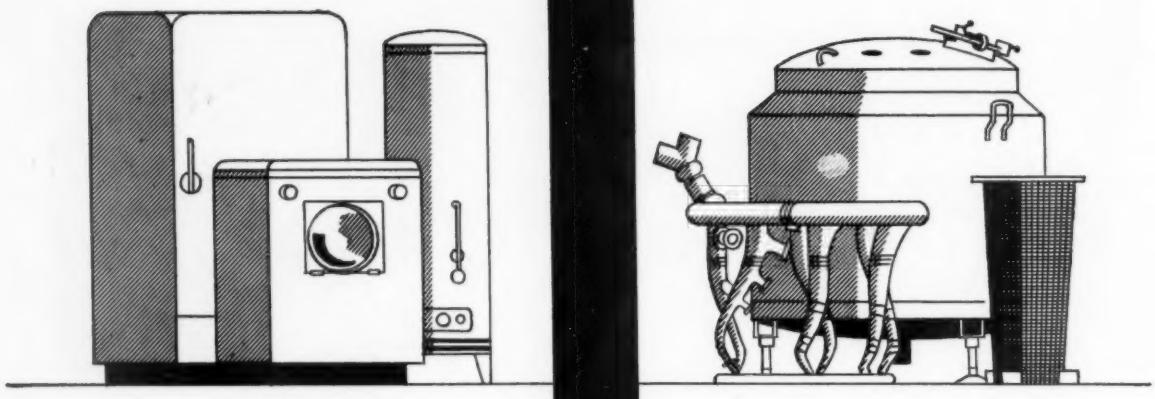
Macco makes many other Metal-Working specialties that you need.

Makers of Better Metal-Working Compounds Since 1931

MACCO PRODUCTS COMPANY

9210 SOUTH SANGAMON STREET • CHICAGO 20, ILLINOIS

for consumer or industrial products



Porcelain Enamel adds *salability*

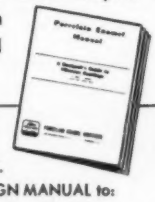
If *greater salability* is one of your design objectives, consider the potent sales features provided by Porcelain Enamel—eye-appeal, durability, ease of cleaning, and unequalled resistance to moisture, heat, abrasion and corrosion.

For consumer products, the Porcelain Enamel finish insures scratch-proof beauty and non-fading color; it gives products longer life and makes them easy to keep clean and new-looking.

For industrial products, Porcelain Enamel's outstanding ability to resist corrosion, abrasion, high temperatures and thermal shock has a strong appeal to buyers. And for many products used in industrial service, the added beauty, color and ease of cleaning provided by Porcelain Enamel are "bonus" advantages that make selling easier.

To assist engineers and designers in properly appraising the advantages of Porcelain Enamel, we will be glad to furnish technical data and assistance.

The Porcelain Enamel DESIGN MANUAL shown here gives practical suggestions and factual data helpful in making most effective use of this modern engineering material. We will be glad to send you a copy.



Lifetime PORCELAIN ENAMEL

PORCELAIN ENAMEL INSTITUTE, INC.

1346 Connecticut Avenue, N. W. • Washington 6, D. C.

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1346 Connecticut Ave., N. W., Washington 6, D. C.
Please send a copy of the PORCELAIN ENAMEL DESIGN MANUAL to:

Name_____

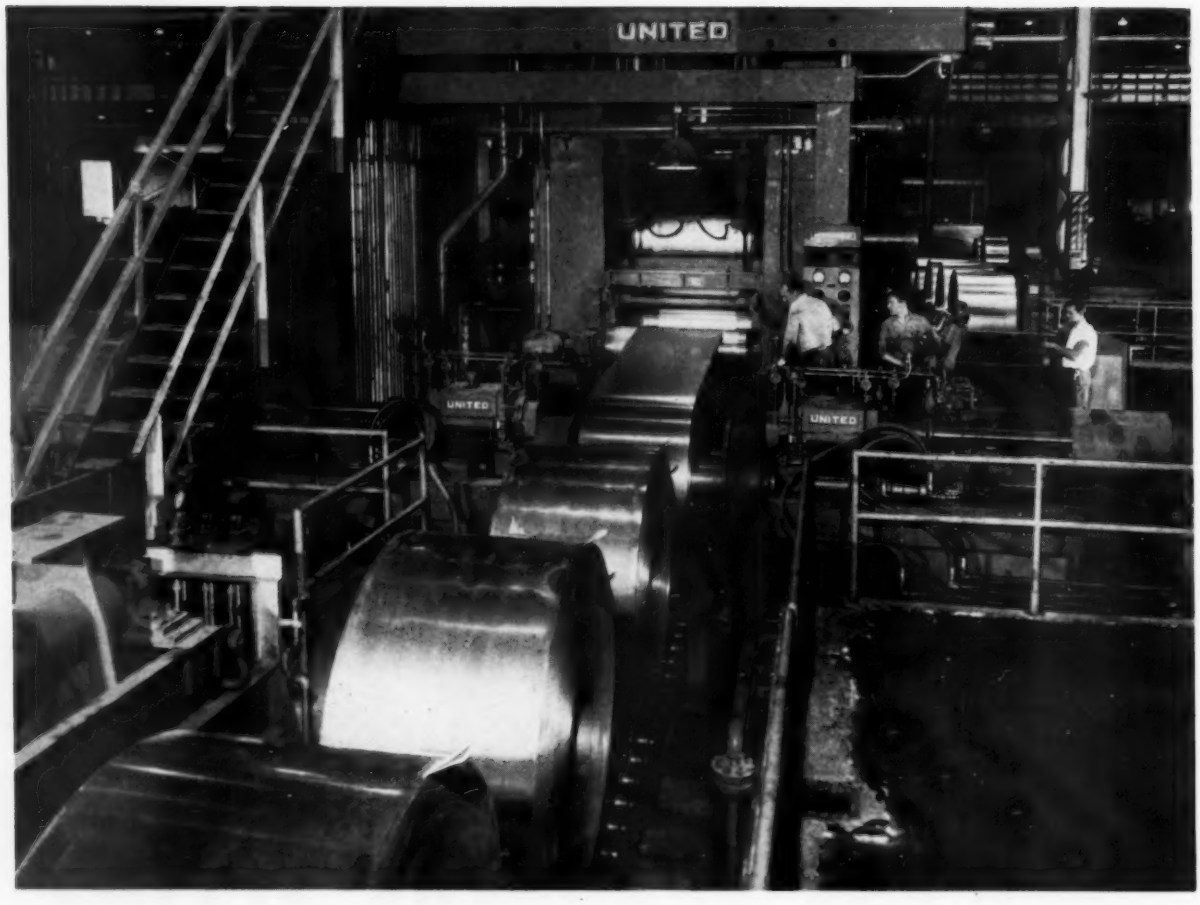
Company_____

Address_____

A TRIAL IS WORTH ONE THOUSAND CLAIMS

Yes . . . one trial of Hommel Granular Frits will convince you that the enamel used on your product will have been improved! Hommel water quenched Granular Frits are shattered by a continuous flow of quenching water, and the soluble salts are carried away, resulting in better grinding characteristics and more stable enamel slips. Hommel Granular Frits and enameling Oxides are the perfect pair to create the best enameling results in colored Home Appliances . . . color beauty preferred by the housewife and color stability by the enameler.

WRITE FOR YOUR TRIAL TODAY!



The right temper in Youngstown Sheets means better fabricated products

Sheets with the right temper are easier to form. They're ductile. And that means fewer rejects and better fabricated products for you.

But that kind of quality has to be built in. And the modern temper mill shown above is only one step in Youngstown's carefully controlled manufacturing process. Youngstown sheets are actually checked for quality right from the original ingot to the final coils. They're rolled to close specifications, annealed to exact requirements and tested and inspected all the way.

Many manufacturers are enjoying the cost advantages of Youngstown quality sheets. You can join them, by calling your nearest Youngstown District sales office. There are 28 of them, all conveniently located.

QUALITY YOUNGSTOWN SERVICE

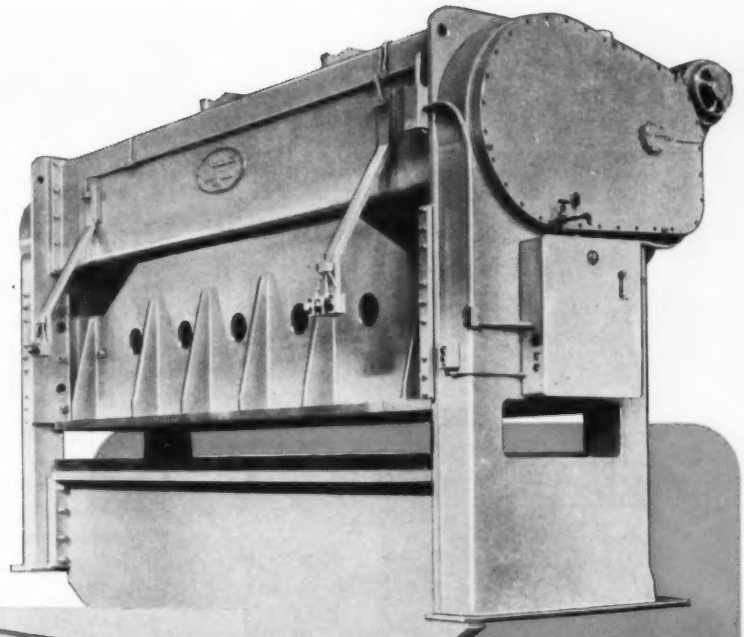
Youngstown *COLD FINISHED SHEETS*

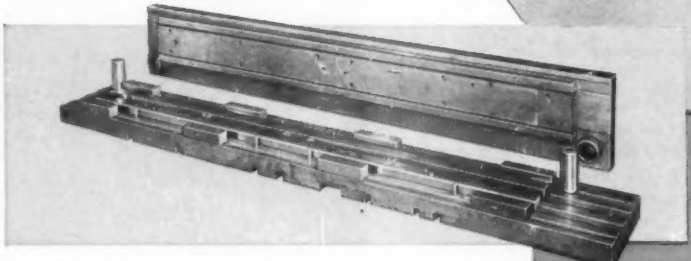
THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

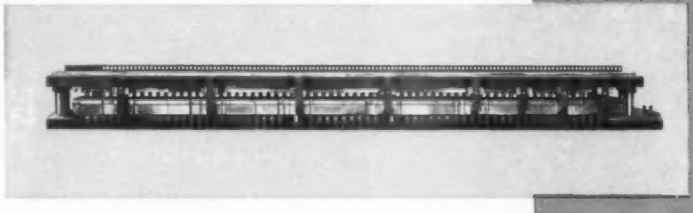
General Offices Youngstown, Ohio District Sales Offices in Principal Cities.

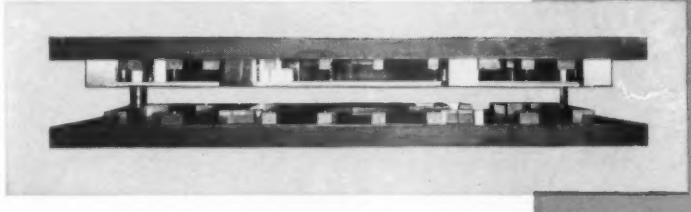
SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - BLACK PLATE - RAILROAD TRACK SPIKES - MINE ROOF BOLTS

Specially designed for **PRE-FORMING** your appliance cabinet material









Special dies for notching, punching, embossing, flanging, etc. are furnished to specification with each machine.

The Struthers Wells **PUNCHING and NOTCHING Machine**

This versatile equipment permits rapid changeover of die sets used in processing steel sheets prior to roll forming, and affords maximum precision and convenience in service. With a capacity of 200 tons, the machine's bed and ram platen are 192" long x 48" wide maximum; 96" long x 36" wide minimum. Stroke is 5", with operating speed of 30 strokes per minute. Start, single stroke, continuous run and inching controls are provided. Write for full details.

Struthers Wells

MACHINERY DIVISION

STRUTHERS WELLS CORPORATION

Titusville, Pa.

Offices in Principal Cities

1920 FERRO 1955

A business grown big through SERVICE

1947

Ferro builds plant in Nashville, Tenn., to produce frits and blended clays for the P.E. industry.

1955

Nashville plant breaks all production and sales records, serving P.E. customers in 14-state area.

FERRO CORPORATION

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IN CANADA: FERRO ENAMELS, LTD., OAKVILLE, ONT.

retiring after 45 years

Gentlemen:

Please discontinue sending me your wonderful magazine as of July 1, because on that date I will retire after 45 years with Butler Manufacturing Company. Thanks very much. I have always looked forward to your magazine arriving at my desk.

J. W. Johnson
Purchasing Agent
Butler Manufacturing Co.
Minneapolis, Minnesota

---

a good recommendation

Gentlemen:

Please send one copy of your magazine *finish* (the magazine of appliance and metal products manufacturing) addressed to my attention.

This publication has been highly recommended as a source of valuable information which could be utilized in the type of work performed by this department.

S. R. Suleski, Manager
Home Instrument Department
RCA Victor TV Division
Radio Corporation of America
Camden, New Jersey

---

needn't borrow copies any more

Gentlemen:

Some months ago I completed a listing of personnel from our plant who would like to receive complimentary subscriptions to your publication *finish*. They have all received their issues regularly except one.

I believe my name was listed with them since my functions include the areas covered by your magazine. Could you also re-include my name for such a subscription? I would appreciate it since I must borrow a copy each time I discover one has been published.

Robert E. Meyer
Plant Engineer
Toro Manufacturing Corp.
Minneapolis, Minnesota

We are sorry for the oversight, and have double-checked to see that your name is now on our mailing list. — Eds.

1920 FERRO 1955

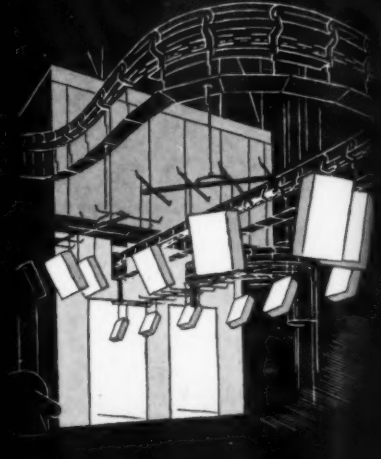
A business grown big through SERV

1948

Ferro holds first "P.E. Furnace sch training customers' personnel in ne firing and maintenance techniques

1955

Ferro P.E. Furnaces set new servi records (operating over 800,000 h since last major overhaul of a sing



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IN CANADA: FERRO ENAMELS, LTD., OAKVILL

AMAZING "AUTOMATED" DRILL-GRINDER TEAM

DOES THE JOB 22 TIMES FASTER

Machining mounting surfaces on the underside of huge tank hulls required ten separate horizontal boring mill setups. Handling, positioning and working on the heavy, unwieldy hulls created a serious bottleneck in production.

Relying on Wean Equipment's reputation as a leading designer and builder of special machinery for industry this concern gave Wean the green light. Wean Equipment engineers set to work and came up with the first completely automatic adaption of a bank of grinding heads to work on an angular surface.

The machine grinds all surfaces simultaneously with unmatched precision, and completes its job 22 times faster than the old method. According to company officials the machine paid for itself in short order by increasing production, eliminating reworking created by human error, and releasing boring mills to other production work. Result: A second machine to perform a difficult drilling operation on the same hull was ordered from Wean. These are typical examples of Wean Equipment's ability to develop and build practical automation equipment.

If you have a production problem — why not call on Wean Equipment and get results.

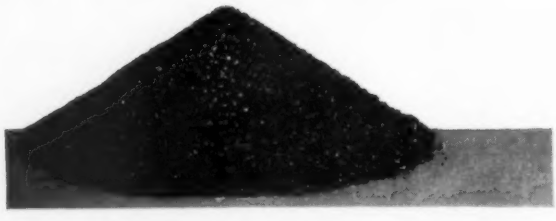
Wean

EQUIPMENT CORPORATION

CLEVELAND, OHIO

Try Century Vit

GROUND COAT



"Start right from the Steel out" is more than a slogan — it represents a policy and belief at Century that without an easy-working, trouble-free ground coat with good adherence or "Grip" no finish can give trouble-free service for the life of the product.

The millions of pounds of Century ground coat frit that are used every year by our customers give extra assurance of trouble-free finishes, both in the shop and on the finished product.

Century *time-proved* frits "put dollars in your pockets" too. They are priced right to start and there are "in plant" savings that count up fast.

If you haven't tried this economical, trouble-free enamel, contact us and we'll see that you have the opportunity

An experienced field staff serves the plants of all Century customers. Phone POrtsmouth 7-7260.

FRIT from CENTURY FRIT MASTERS

CENTURY VITREOUS ENAMEL COMPANY

• 6641-61 S. Narragansett Ave., Chicago 38, Ill. •

THERE'S HEAT THERE'S FAHRALLOY

WHERE THERE'S HEAT THERE'S FAHRALLOY WHERE THERE'S HEAT THERE'S FAHRALLOY WHERE THERE'S HEAT THERE'S

FAHRALLOY...

engineering experience
is yours for the asking

For over 20 years Fahralloy engineering experience has helped solve many stubborn problems involving burning tools for the porcelain enamel industry. These range all the way from "S" hooks to complete fixtures for firing washing machine tubs.

The point is that no matter what your burning tool problem may be . . . no matter how tough you may think it is you can have complete confidence that you'll get the right answer at Fahralloy. Remember, too, that Fahralloy engineering experience is something that can't be bought — but it's yours for the asking.

FAHRALLOY BURNING TOOLS
are the No. 1 choice of the
Porcelain Enamel Industry

THE FAHRALLOY CO.

150th & Lexington Ave. — Harvey, Illinois

In Canada — Fahralloy Canada, Ltd., Orillia, Ontario

No other

manufacturer

can offer you

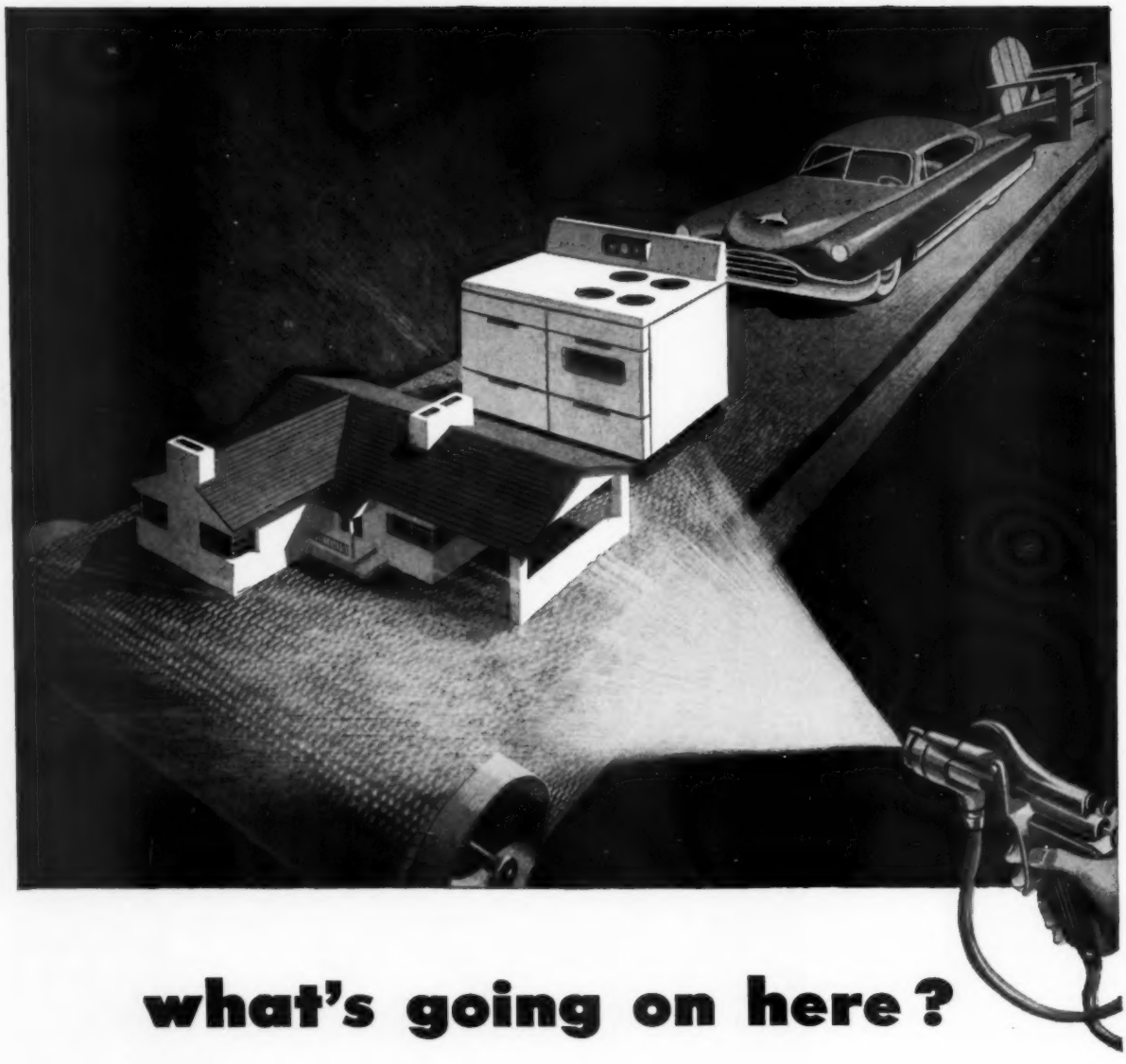
such a wide range of

PLANT TESTED FRITS

INGRAM-RICHARDSON INC. OFFICES, LABORATORY AND PLANT, FRANKFORT, INDIANA

THE finish spotlight

The generous extra-size oven in Perfection's new 30-inch gas range is ideal for complete oven meals or to accommodate company-size roasts and holiday fowl. Overall, the range is finished in gleaming white titanium porcelain enamel.



what's going on here?

Titanox titanium dioxide, for one thing. It's going on more products, for home, industry, business and personal use, than ever before. As a part of the finish, it's giving new life to colors, making whites whiter, adding hiding power and durability.

For the organic finishing field—paints, enamels and lacquers—Titanox has developed rutile titanium dioxide pigments that provide new levels of brightness, opacity and fade-chalk resistance. These pigments are TITANOX-RA, TITANOX-RA-50 and TITANOX-RA-NC.

For the porcelain enamel field, non-pigmentary Titanox titanium dioxide has been developed. Specially processed for ceramic use, TITANOX-TG or, for blue-whites TITANOX-TG-400, assure color uniformity, afford greater production speed and economy . . . superior titania porcelain enamels.

Our Technical Service Department is willing any time to help manufacturers of finishes to make the best use of Titanox titanium dioxide pigments. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

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TITANIUM PIGMENT CORPORATION

Subsidiary of NATIONAL LEAD COMPANY

STAINLESS STEEL

WOOD SCREWS

PHILLIPS OR SLOTTED **FLAT • ROUND • OVAL**

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- PACKED FOR PROTECTION. Southern Screws arrive without loss in indestructible cans with sealed, locking tops.
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McDANEL

VITREOUS PORCELAIN *Grinding Balls*

MADE FROM A SPECIALLY DEVELOPED BODY FOR...

Long Wear

McDanel Ceramic Grinding Balls are fired over a long period of time at controlled temperatures, assuring complete vitrification. This care in manufacturing has given them an impressive history of long wear and dependable grinding.

Purity

McDanel Ceramic Grinding Balls, sold since 1919, have been the standard in ball mill operations where purity is of prime importance. They are manufactured with exacting control, assuring uniform content and pick up, lot after lot.

Better Impact Resistance

It is the specially developed body which gives McDanel Ceramic Grinding Balls their excellent impact resistance. After firing, a slow, thorough cooling process prevents any strains being set up. It is this almost complete absence of cooling strain which prevents chipping or cracking.

Uniform Grinding

Naturally, uniformity is of prime importance in any grinding operation . . . both in grinding media and end result. McDanel Ceramic Grinding Balls are hand rolled with no seams to break or chip.

WRITE FOR YOUR McDANEL INDUSTRIAL CERAMIC CATALOG TODAY!

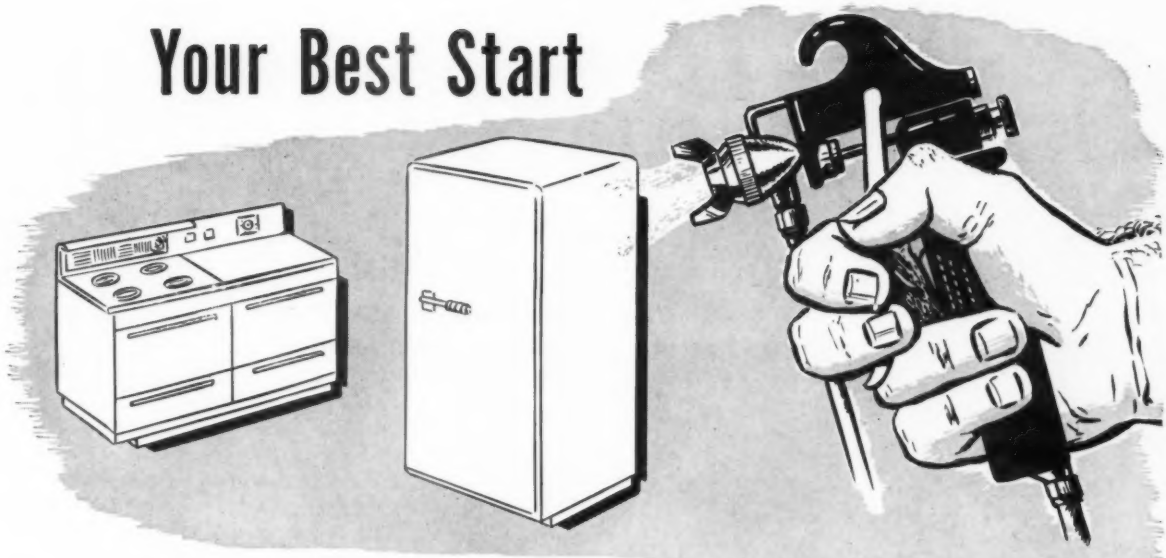
McDANEL Industrial PORCELAINS

McDANEL

REFRACTORY PORCELAIN COMPANY

BEAVER FALLS · PENNSYLVANIA

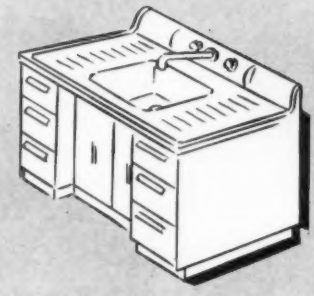
Your Best Start

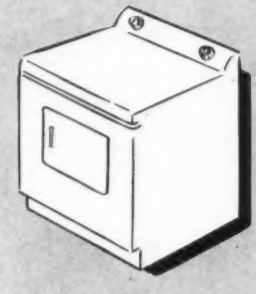


for a Better Finish...

Porcelain Enamel Containing

FOOTE LITHIUM



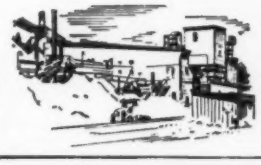


- "Softer" composition for faster firing schedules
- Ideal workability for smooth, abrasion resistant finish
- Lower firing temperatures
- Low bubble structure

. . . these are a few of the advantages you will profit by when you use a porcelain enamel frit containing Foote lithium.

It will pay you to get the facts about the ingredient that makes the difference—Foote lithium.

LITHIUM CHEMICALS FOR INDUSTRY



Kings Mountain, N.C. . . . where Foote is mining large deposits of spodumene.

Sunbright, Va. . . . the world's largest lithium chemical plant.

FOOTE MINERAL COMPANY

412 Eighteen West Chelten Building, Philadelphia 44, Pa.

RESEARCH LABORATORIES: Berwyn, Pa. • PLANTS: Exton, Pa.; Kings Mountain, N.C.; Sunbright, Va.

A CHALLENGE!

THE STRONGEST MADE BY ANY GALVANIZED SHEET:

Anything that can be made of steel sheets can be made of

WHEELING

SOFTITE®

galvanized sheets!

IF you've been having difficulty fabricating galvanized sheets, try Wheeling SOFTITE Galvanized Sheets.

Here are sheets you can work to the limits of the base metal . . . so ductile, so tight-coated, you can use them for anything you make of steel sheets.

Bead it, draw it, seam it . . . you name the operation . . . Wheeling SOFTITE will take it and come back for more . . . with never a trace of chipping or flaking of coating. And for good reason—SOFTITE *has the tightest zinc coating yet produced.*

Put SOFTITE to the test. See for yourself why the demand for SOFTITE has forced Wheeling to triple its production facilities in 1955.

Galvanized steel does it better . . . SOFTITE does it best!

For full information, call or write the Wheeling sales office nearest you.

District Sales Offices: Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, Houston, New York, Philadelphia, St. Louis, San Francisco
WHEELING STEEL CORPORATION, WHEELING, WEST VIRGINIA

IT'S WHEELING STEEL

INTERNATIONAL HARVESTER

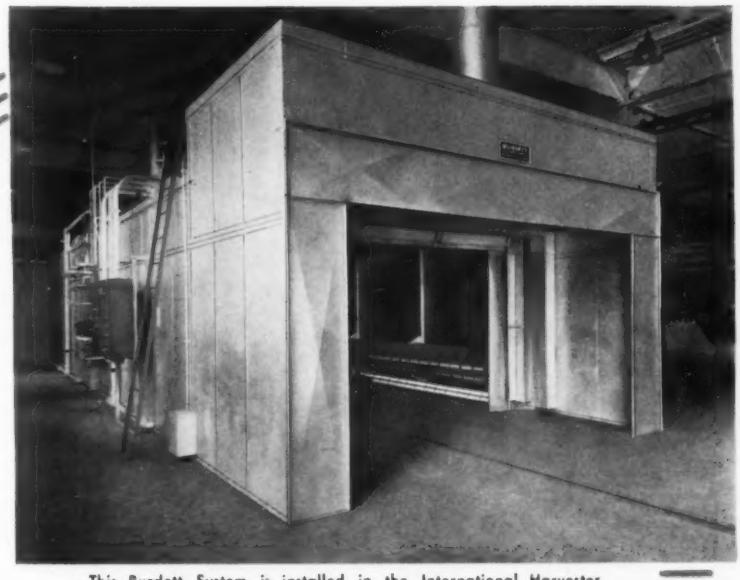
Heavy Equipment Completely Baked in 20 Minutes

These are the results which have made Burdett "Radiant-Heat" Systems the preferred paint drying method for all types of products from toys to heavy duty equipment like the crawler tractor equipment shown here.

Burdett "Radiant-Heat" Ovens equipped with Model 10L Radi-Heat Line Burners are particularly suited for handling the tougher assignments, such as; tractors, bulldozers, earth movers, trucks, heavy welded fabricated parts, etc. with a remarkable saving in time and fuel, plus the assurance of a better finished product.

Here's why such speed is possible only because the radiant heat which is generated by the Burdett System reaches the metal work with virtually no loss. Baking of the enamel finish is accomplished by the combination of Radiant-Heat and controlled air recirculation. Control equipment for this oven has been specifically designed to meet International Harvester Company and JIC specifications.

Burdett No. 10L "Radi-Heat" Line Burners, as used here, satisfy unlimited applications with a new efficiency and lower cost. They have been known to cut fuel costs as much as 70%, as compared with conventional methods.



• This Burdett System is installed in the International Harvester Company Tractor Works. Enamel finishes are baked on the husky International equipment in 20 minutes time.

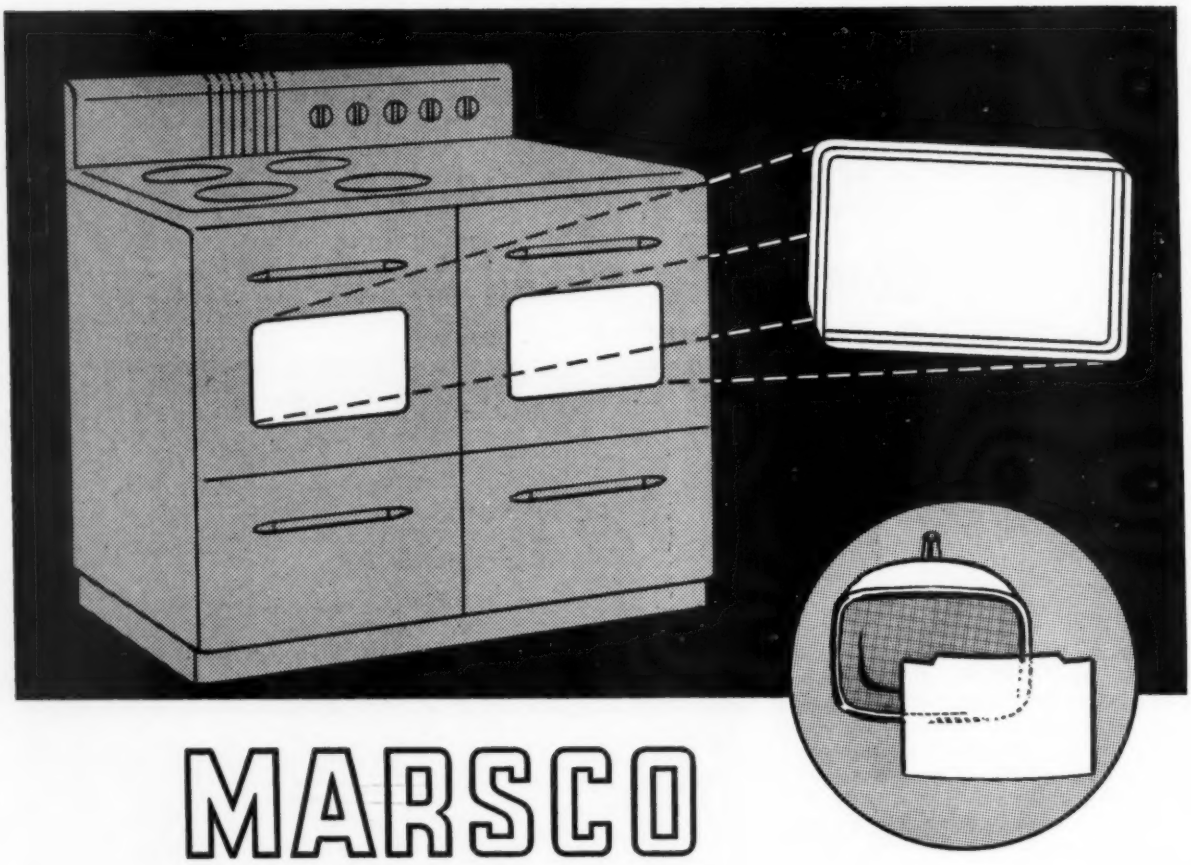
Let us send you detailed information on Burdett "Radiant-Heat" Ovens for your finishing department —to convert your existing oven — or for a complete new system.

BURDETT
MANUFACTURING COMPANY

3401 West Madison Street, Chicago 24, Illinois

Detroit Philadelphia New York Cleveland Dallas

Manufacturers of
COMPLETE FINISHING SYSTEMS — "RADIANT-HEAT SYSTEMS", OVENS, HEATERS
AIR MAKE-UP UNITS, SPRAY BOOTHS AND WASHERS



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Glass — enhances the beauty and broadens the acceptance of your product whether in the utility appliance field or the growing electronic industry.

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Join the major appliance manufacturers now enjoying extra sales from the appeal and prestige contributed thru the luster of glass — MARSCO'S Crystal Clear Glass.

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Heating rates of various pans on the electric range

by A. L. Friedberg • RESEARCH ASSOCIATE PROFESSOR OF CERAMIC ENGINEERING, UNIVERSITY OF ILLINOIS, URBANA, ILLINOIS

Exclusive feature finish

The performance of various types of kitchen utensils regularly used on the top of the stove has been a subject that has concerned many home-users. The question of whether it takes longer to cook in one type of utensil as compared to another has never been fully answered. There have been, it is true, a number of studies reported on the rates of heating of utensils, but these have not been wholly satisfactory for the simple reason that the utensils tested were of different sizes and shapes instead of being uniformly alike. Nor, to date, has much information been available on the rate of heating of different standard utensils on the electric range units.

To marshal the facts, some carefully controlled tests have recently been completed at the University in which pans of identical size and shape but made of different materials were used. Six of these pans, of the overall dimensions of the standard[1] two-quart pudding and made of copper, aluminum, stainless steel and porcelain enameled steel, were tested on an electric range unit.

The test to determine the respective rates of heating was set up on the basis of the time required to heat 1500 ml. of water from 70 deg. F. to 200 deg. F.[2]

The pans tested were:

24 gage copper, weighing 450 grams

24 gage stainless steel, weighing 325 grams

19 gage aluminum, weighing 95 grams

26 gage aluminum, weighing 95 grams

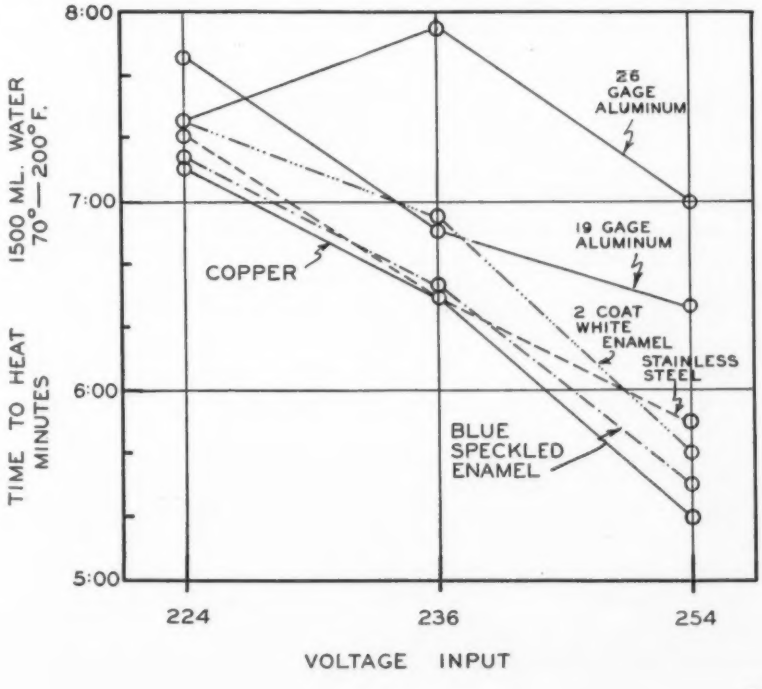
1 coat blue speckled porcelain enamel on 26 gage steel, weighing 315 grams

2 coat titanium white porcelain enamel on 26 gage steel, weighing 325 grams

All six pans were tested at the rated voltage of the electric range which was 236 volts. They were also tested at 224 volts and at 252 volts. These latter two voltages represent the low and the high limits of residential electrical energy supplied by the public utility companies in this country. The results of these rates of heating tests are shown in the accompanying chart.

In the chart, the time required to heat the water from 70° F. to 200° F. is shown for each pan at the three different voltages.

This chart shows the heating rates of various pans on an electric range unit at three different voltage inputs. The bottom diameter of each pan was 6 inches, with diameter of heating surface being 5¾ inches.



1. Commercial Standard CS100-47

2. The test method was similar to the cold start test procedure described in American Standards Association Test, "Household Electric Ranges," approved by National Electrical Manufacturers Association, June 1950

The temperature of the range unit changes, of course, with the voltage supplied. The higher the voltage the greater the temperature of the range unit. The time to heat the utensil, then, decreases at the higher voltage, as shown on the chart.

It was also found that the change in voltage affects the rate of heating of the pan more significantly than does a change in pan material. The copper pan, for example, had these times for heating:

at 224 volts	7 min.	10 sec.
at 236 volts	6 min.	30 sec.
at 252 volts	5 min.	20 sec.

Yet, at 224 volts the time required to heat the six different pans ranged from 7 minutes, 10 seconds to 7 minutes, 45 seconds, or a difference of 35 seconds. Fastest to heat was the copper pan. Slowest to heat was the 19 gage aluminum pan.

With the stove unit set for the rated 236 volts, the time required to heat the six different pans differed somewhat, as follows:

Pan	Time to Heat
Copper	6 min. 30 sec.
Stainless Steel	6 min. 30 sec.
Blue Speckled Enamel	6 min. 35 sec.
19 gage Aluminum	6 min. 50 sec.
White Enamel	6 min. 55 sec.
26 gage Aluminum	7 min. 55 sec.

This spread in the heating rates is about 1½ minutes, and is shown in the chart at the 236-volt position. If the anomalous behavior of the 26 gage aluminum pan can be disregarded, the greatest difference in the heating rates of the six pans at this voltage was less than 30 seconds!

From consideration of thermal conductivity or specific heat for the different pan materials, there is no clue to account for this slight difference in heating behavior of the various pans.

It is noted that copper has a thermal conductivity over 25 times that of stainless steel and over 300 times that of enamel glass. Yet, in the tests on heating rates, the copper, stainless steel, and blue-speckled-enameled pans were almost identical in rates of heating.

It is important to note, then, from these tests that thermal conductivity of the pan material has very little significance on the rate of heating of pans on the electric range unit. As a matter of fact, from the home-users point of view, there is really very little difference in the rate of heating amongst all the different types of utensils.

Values of the Different Pan Materials

	Specific Heat[1]	Thermal Conductivity[2]	Density[3]
Copper	.092	.941	8.96
18-8 Stainless Steel	.119	.036	7.93
Aluminum	.215	.530	2.71
.08 Carbon Steel	.115	.140	7.87
Enamel Glass	.250	.0025	2.50

1. Specific Heat in cal./gm./°C.
2. Thermal Conductivity in cal./sq.cm./cm./°C./sec. at room temp.
3. Density in grams/cub cm.

While the confusion on the heating rates would appear to be cleared up by these tests, there should also be some comment about some of the other conditions under which these different pans may be used on electric stove units. We are referring, of course, to what happens when kitchen utensils are abused. This was explored in tests made with the pans deliberately allowed to "boil dry."

With the modern electric range the surface units, when operated at rated voltage, reach a temperature of close to 1500° F. As we have already observed, the temperature of the element will be less at a lower voltage and greater when the voltage exceeds the rated figure of 236 volts. However, it is only when there is no liquid in a utensil that it gets sufficiently hot to approach the temperature of the surface on the range element itself.

Since, with the modern electric range, the temperature can climb as high as 1500° F., every one of the six pans tested suffered some damage. Aluminum, with a melting point of 1215° F., is subject to melting away at the pan bottom. Stainless steel pans discolor severely at these high temperatures, and porcelain enameled pans tend to "stick" to the heating element. If these various types of utensils are used properly, not boiled dry, they give many years of service.

"THIS HOT WEATHER'S MURDERING MY FEET."

PHILCO'S ROASTMETER...

Another

KS

Customer Cooperative

ACHIEVEMENT

Philco's new Roastmeter electric range, an outstanding advance in automatic cooking, is another achievement of K-S Research in cooperation with the engineering staff of its customer.

Philco had been working on the device which would keep the cook continuously informed of the progress of the roasting process without having to open the oven door or stoop down to peer into a hot oven.

The problem involved the design of a suitable sensing element or probe for the meat and the electrical transmission of actual inside meat temperature to an indicator on the range control panel. It was in resolving this problem that K-S helped Philco in the final design of the Roastmeter.

The materials selected for the probe assembly provide for a maximum operating temperature of 500° F.

The transmission and indicating elements compensate automatically for fluctuations in input line voltage and for ambient temperature variations up to 200° F.

When you standardize on K-S indicating and control equipment, you increase the sales appeal of your product and you build customer good will. K-S engineers are always available for information and suggestions.

KING-SEELEY CORPORATION

KS

ANN ARBOR, MICHIGAN

7193

Carl Cavanaugh, left, general foreman of assembly and paint department, checks the filters in paint booth ceiling with Minor Dow, representative of the filter manufacturer.

How clean is your paint room air supply?

case history of a "clean up" campaign which involved changing a filtering system and placing paint rooms under pressure

Exclusive feature finish

Dirt, the bane of any painting operation, was plaguing the John Bean Company, Lansing, Michigan, during the spring and summer of 1954. The dirt, which was filtering into the company's paint booth, raised a serious problem in terms of both operating costs and failure to meet required delivery dates.

The John Bean Company, a division of the Food Machinery and Chemicals Corporation, manufactures agricultural, automotive and fire fighting equipment. Within the latter category are both small industrial in-plant fire fighting units as well as volume and high-pressure fog, municipal-size fire fighters.

Because every large engine is a custom order, exacting specifications

for various colors normally are placed with each order.

"Paint and exact matching to specifications plus high quality finish is one of our sales features," Owen Wilson, of the advertising department, related.

The company uses large amounts of air both for ventilation in its painting booth and for air drying of the assembled and painted fire engines. Incoming air, however, contains large amounts of dirt and fly ash thrown off by Lansing's many forge shops, located southwest of the company plant and carried to the plant on the prevailing southwest wind. This situation coupled with the long dry spell, made the dust and dirt problem almost insurmountable. The ineffectiveness of the filters that were being used by the company at that time caused the paint line to come to a virtual standstill.

A twisted paper filter was used at the primary air intake on the plant roof. Secondary filters, located in the ceiling of the paint spray booth, were of the spun glass variety normally used for home furnaces. Neither set of filters was trapping the dirt and dust.

What made the situation even more precarious, was the uneven air distribution through the paint booth. Most of the air was being forced through the ceiling filters at the front of the booth above the area where the hoods and front fenders of the vehicle were located. On the other hand, very little air came through the filters at the center and back of the booth.

"Fenders and hoods were very bad," plant superintendent Arthur David said. It was necessary to repaint several. "We had to strip them down to the bare metal and start all over again. Every repaint job we did cost us over $100."

The newly painted trucks remain in the paint booth for two hours while the paint is tacky. Because of the inadequate filtering, dirt and dust seeped through and adhered to the paint during this tacky period. Later the trucks are moved into the drying room, which adjoins the paint booth, where clean air is necessary for air drying. While dirt does not show on the primer coat which lacks gloss, when gloss paint is sprayed, dirt that had adhered to the primer coat shows clearly.

As an example of how damaging improper filtration was to the John Bean Company, one truck came off the final line nearly purple. This discoloration was the result of dirt and dust in the air. The vehicle had to be reworked almost completely before it could be shipped.

In an effort to remedy the situation and trap the dust of the incoming air, oiling the spun glass filters was tried. This did improve the situation briefly but then the oil dripped through and spotted the paint.

After a number of hit or miss efforts at correcting the problem and consultations with various filter manufacturers, a correct solution was found with the installation of an entirely different type of filtering system.

The filter panels are baffle impingement-type air filters, constructed of layers of crimped galvanized screen wire of carefully selected mesh arranged to form a progressively denser filtering media from the air inlet face to the air outlet face of the panel. The dust laden air, broken into hundreds of tiny currents by the wire baffles, constantly changes direction, impinging dust content on the viscous-coated filter media. Progressive density construction using heavy wire mesh and many extra layers of wire baffles provides exceptionally large dirt holding capacity.

Filters installed without remodeling existing ductwork

The filters were installed ahead of the fan at the air intake and back of the fan to completely line the ceiling of the paint spray booth without remodeling any of the existing ductwork. Air velocity was measured throughout the booth, and the filters were supplying air equally to all sections of the booth.

One problem still remained. Some dusty plant air was being drawn into the booth because the booth was under a slight vacuum with the exhaust drawing more than was being supplied by the fan at the air intake. Since the booth was not completely sealed, this dusty air was coming in through cracks and underneath doors at either end of the booth. This condition was remedied by putting the booth under slight pressure so that dirty plant air was not drawn in. When this adjustment was made, and

to Page 78 →

Owen Wilson, left, of John Bean Company advertising department, and Carl Cavanaugh look over the paint finish and controls and gauges on the side of a new fire engine.

PHOTOS COURTESY AIR-MAZE CORP.

The G-E refrigerator has come a long way since 1933

... and so has Du Pont DULUX® enamel!

GENERAL ELECTRIC'S famous "monitor top" refrigerator delighted homemakers with its efficiency and good looks back in 1933. But finding *new ways* to make kitchens more beautiful, more pleasant to be in . . . *new ways* to give America's women more and more leisure . . . has been among the basic aims of General Electric over the years. That's why today's General Electric refrigerator, with its new revolving shelves, is a marvel of streamlined efficiency and compactness that the 1933 housewife could not even dream of.

And so it is with America's leading home appliance finish—Du Pont DULUX Enamel. Constant research over the years by Du Pont chemists has resulted in a finish with rugged resistance to chipping, cracking, scratching and staining. *Now* DULUX is easier to clean . . . keeps its glistening white beauty longer than ever before! That's why the DULUX of today meets the most exacting requirements of *today's* topflight appliance manufacturers. E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington 98, Delaware.

DU PONT
REG. U.S. PAT. OFF.

"DULUX" ENAMEL

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

America's leading home appliance finish

. . . has helped sell over 36,000,000 refrigerators!

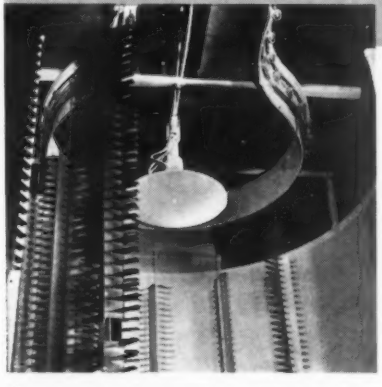
"One day we were using **14** hand sprayers ...the next day, **2**

"One day we were using **180** gallons of paint ...the next day, **75**

"Fantastic?" **Not exactly. It's a typical, on-the-job-example of the savings made possible with the**

RANSBURG NO. 2 PROCESS
Electrostatic Spray Painting

And, in this instance* production was increased; quality of the work improved, and rejections cut to practically nothing.

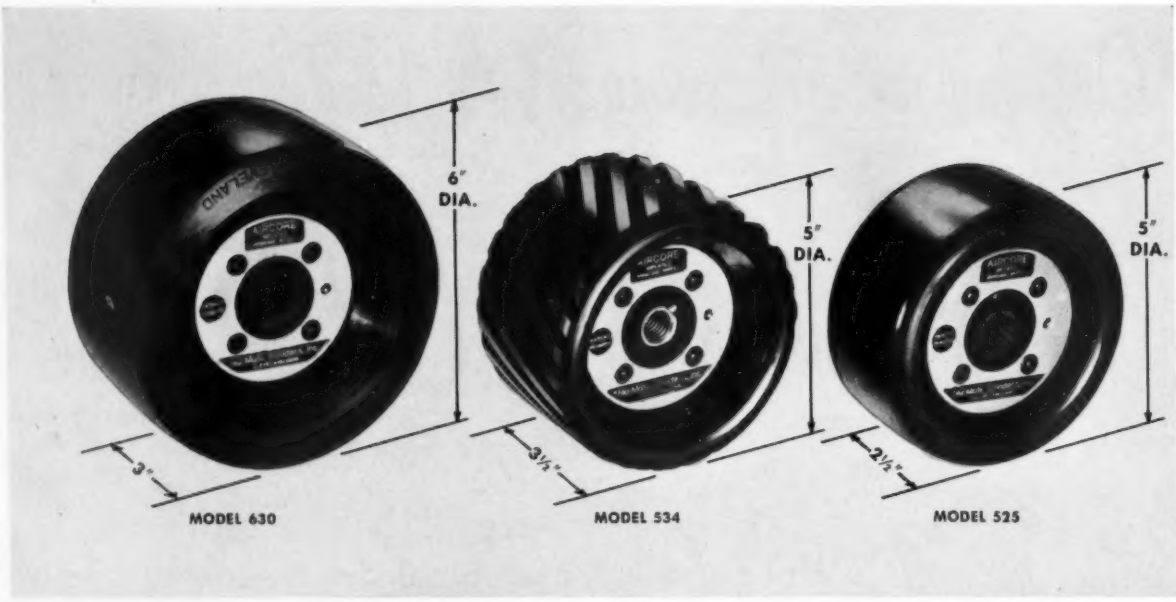


*Fluorescent Fixtures of California, in their modern plant in South San Francisco, uses the Ransburg No. 2 Process Reciprocating Disc Atomizer to paint their popular line of ALL-BRITE lighting fixtures. The quotes above are from Works Manager, R. H. Shaffer.

Regardless of the type of product you manufacture, if it's painted... and, if your production justifies conveyorized painting, you should look into the savings (and improved quality) which can be yours with one of the Ransburg Electrostatic Painting Processes. May we tell you about complete Ransburg services? Write to Dept. F.

Ransburg **ELECTRO-COATING CORP.**
Indianapolis 7, Indiana

RANSBURG



Interchangeable Aircore Grinding Wheels now available in three sizes

Shown above are three Aircore Inflated Grinding Wheels that feature interchangeable contact drums. All three models are available with plain or serrated contact faces and can be used with all standard drive methods.

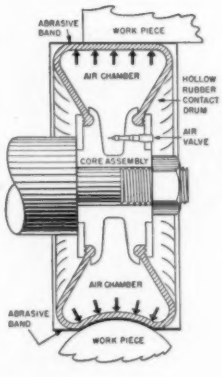
The core assembly is identical for all three models. Complete change-over from one size contact drum to another size takes less than five minutes.

The extremely light weight of these models helps reduce operator fatigue. The Model 534 weighs only 15 ounces.

A gradual "feather" blend instead of a hard edge cut is produced by Aircore's new sidewall and rounded edge construction.

Any durometer hardness can be duplicated simply by varying air pressure in the air chamber.

All the facts about Aircore Grinding Wheels are yours for the asking. Write today for Aircore Bulletin No. 9.



The Nu-Matic Air-Inflated Grinding Wheel is built like an auto tire — flattens out at point of contact — contours to work surface.

Here you see the large grinding area that an Aircore gives on flat surfaces. A sheet of glass is pushed against an Aircore wheel that has been inflated to 3 pounds pressure.

NU-MATIC GRINDERS, INC.

8224 Carnegie Ave. Cleveland 3, Ohio

Surface finishing aluminum castings

the ABC's of polishing and buffing operations for aluminum

by John H. Keating • VICE PRESIDENT-MANUFACTURING, MONARCH ALUMINUM MFG. CO. CLEVELAND, OHIO

Exclusive feature finish

There are *three basic types of aluminum castings* which the average manufacturers will expect to finish — *sand castings, permanent mold castings* and *die castings*. The granular and surface characteristics of these types call for entirely different operation sequences to obtain a satisfactory finish.

Sand castings are the roughest of the three, having pits caused by sand runs, and where gated an impression or imprint called a worm mark. These holes, or blemishes, must be polished out, or, if too deep, first welded and then polished.

Permanent mold castings are much smoother, on the average, than sand castings.

Die castings are the smoothest of the three, as the metal is poured under heavy pressure. The die being water jacketed, the castings set up immediately producing a smooth, (almost glazed) hard surface. This is particularly true when the die is new, but as it gets older the expansion and contraction is so great that the die produces some checks or cracks which must be polished out. Between the inside and outside surfaces, however, the metal is very porous and soft, and great care must be taken in polishing not to cut through the surface. It is difficult, if not impossible, to bring up a good finish on this porous metal between the surfaces.

It is important to remember that the chilled outside surface of the die casting is relatively hard. A permanent mold cast surface, while rougher than a die casting, also has a harder surface than a sand casting.

Die castings hold a sharper definition and are uniformly alike. Permanent mold castings while uniform are not as sharp in definition as a die casting, and surface roughness is greater due to the painting of the mold surfaces, necessary for insulation and proper permanent mold technique. Sand castings made either from a single pattern or from a match plate pattern are relatively rougher than either of the other methods and also show less uniformity between pieces over a long production run.

It is understood, of course, that various alloys result in harder or softer castings.

Aluminum calls for "wet" polishing

The basic principle to be remembered is that practically all polishing operations on aluminum should be run "wet", that is, the polishing wheel surface should be lubricated with oil or grease. The exception to this rule of course is where a satin, butler, or mat finish is desired. Then, the surfaces must be kept absolutely dry in order to obtain the finish desired.

Operations sequence governs final surface

The most efficient method of polishing is to select a grade of abrasive that is coarse enough to remove all surface blemishes and imperfections as quickly as possible. Starting with this base, the sequence of operations depends entirely on the final surface condition required. For example, while it might be necessary on a rough sand casting to start with a 40 emery, the same article in a permanent mold might only require a 90 emery, and the same article in a die casting could conceivably need only

A purchasing problem

The buyer, who is called upon to purchase commercial aluminum castings with a polished or buffed finish, often faces one of the most difficult purchasing decisions. Unless he has an established performance to refer to from his foundry source, he may find himself in the middle of two or more intepretations of the finish desired.

The designer or engineer specifying a polish finish usually has a very bright, smooth surface finish in mind. A bright, smooth polished finish on aluminum castings, basically free from any surface imperfections, requires a definite sequence of operations. If these are not clearly outlined the foundry source may be encouraged to use fewer operations to maintain a competitive position. Some foundries find it desirable to submit a finished sample of the actual item to be produced (or a similar item, if it is a new job) to specifically show the type of finish on which they are quoting.

Experienced purchasing agents and engineers have usually learned how to specify finishing operations and evaluate competitive quotations from experience with previous jobs. Once a designer knows the true cost of the finish he has specified, he can decide whether to hold to his original specification or to choose a limited finish where cost is a prime consideration.

Finish **editors believe that the accompanying article may be helpful in presenting some of the ABC's of surface finishing.**

a 180 emery. All three castings, however, may wind up with a mirror finish. Obviously the intervening operations are costly and therefore most important.

The improvements in artificial abrasives by the abrasive producers plus the improvements in glue, have made it possible to get longer wheel life or belt life during polishing operations.

All of the polishing operations covered in this article are on set up wheels or belts. No reference is made to grinding or snagging with hard vitreous wheels.

The following are the most important factors to be considered for polishing:

POLISHING WHEELS

A. *Type*
   1. Cloth
   2. Leather
   3. Felt
   4. Air-inflated
   5. Serrated (solid or inflated)

B. *Speed*
   1. Surface feet per minute is the determining factor rather than rpm of the lathe, therefore, diameter of wheel must be considered with the shaft speed.

C. *Lubrication*
   1. The wheel must be well lubricated.
   2. Centrifugal force tends to throw the grease or oil off the wheel so it must be applied frequently. It is wasteful to apply more than will adhere to the wheel at any given time.

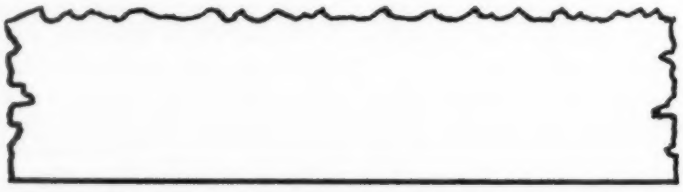
D. *Density*
   1. The density or hardness of the wheel depends greatly on the work being polished. In the case of lettering or flat work, a relatively hard straight-faced wheel is required. When polishing work with radii or contours it is necessary to have a wheel soft enough to conform to the surfaces to that the shape of the article being polished will not be changed.
   2. Rough wheels are generally regarded as being harder and oil wheels as being softer or with greater cushion.
   3. Air-inflated wheels may be adjusted to meet various contour requirements.

E. *Glue*
   1. Animal hide glues are recommended for rough and oil wheels. Because of the flexibility required, only the best glue should be considered. In the final analysis this is more economical since the better glue will absorb more water and in turn last longer.
   2. Proper care of the glue to prevent contamination with grease or oil is most important.

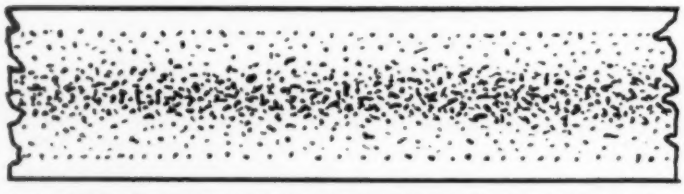
Wheels should never be headed up in a draft, nor should they be force dried.

BELTS

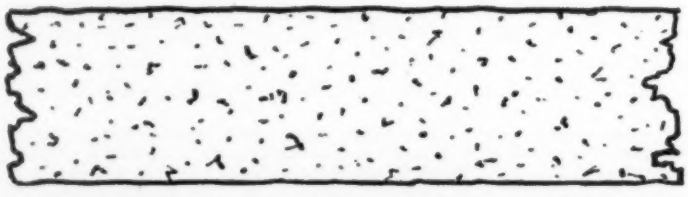
A. Selection of proper belts must be determined by each operation. The backing varies greatly. The recommendations of the



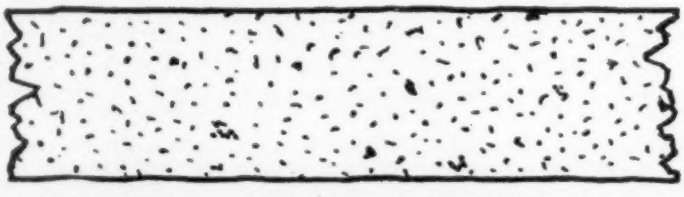
MAGNIFIED VIEW: NORMAL "AS CAST" SURFACE ROUGHNESS — PERMANENT MOLD



MAGNIFIED VIEW: GRANULAR STRUCTURE OF A DIE CASTING. NOTE DENSE SURFACE METAL



MAGNIFIED VIEW: PERMANENT MOLD CASTING WITH UNIFORM METAL STRUCTURE



MAGNIFIED VIEW: SAND CASTING SHOWING LESS UNIFORM METAL STRUCTURE

belt manufacturers can be most helpful.

B. In many cases belts are run on the present polishing lathes using an idler immediately behind or above the lathe.

C. Contour belts are used in conjunction with the standard lathe, the polishing being done on the contour wheel between the drive wheel and regular pulley. Because of their length, belts will run cooler. Care must be taken to see that they do not load up, so, here again lubrication is most important.

Polishing operations

Having determined the best abrasive size for the first operation, the sequence of operations should be carefully analysed so that they tend to break up the polishing surfaces established by the first wheel into smaller minute pyramids. In order to efficiently accomplish this, the work is usually crossed between the roughing and the subsequent operations. If the sequence of operations are incorrect, and too great a jump occurs, drag marks will appear in the finished article which resemble fine porosity. However, if the correct sequence of operations are carefully followed, the buffing operation is much more efficiently performed and the resultant work will give a brighter more pleasing appearance.

The more uniform and finer the serrations the easier the buffing operation will be performed. It is to be remembered that the buffing operation while high lighting the entire surface also distorts or moves enough of the top of the pyramids to fill up the grooves caused by the serrations of the polishing operations.

Buffing

Buffing is generally performed on cloth discs. They may be either full discs (stamped from one whole piece of cloth) or pieced (many small pieces sewed together between retaining outside full discs). Buffs are referred to by their count, for example 68 — 82 would mean 68 threads in a vertical direction and 82 threads per inch in the horizontal direction. A low count buff would of course mean less threads per inch. Such a buff is much more subject to fraying and wear than a high count buff.

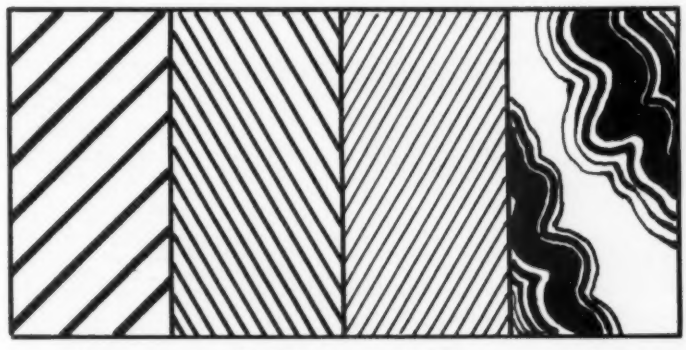
There are many various buffs such as the pleated, air way, and bias buffs, to name just a few. Buffs are relatively quite expensive. Often through mis-use they are burned rather than worn out. The tendency to burn at the center rather than at the surface is especially true of automatic buffs. To overcome this, venti-

MAGNIFIED VIEW: #60 ABRASIVE, 1st OPERATION

MAGNIFIED VIEW: #120 ABRASIVE, 2nd OPERATION

MAGNIFIED VIEW: #220 ABRASIVE, 3rd OPERATION

TOP VIEW MAGNIFIED: SHOWING DIRECTION OF EACH OPERATION IN SEQUENCE

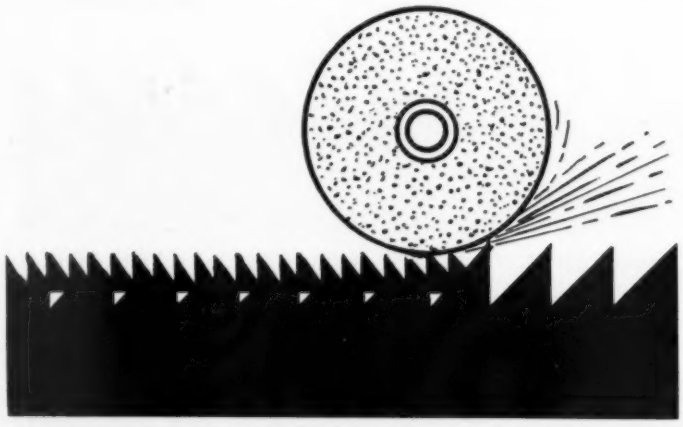


#60 #120 #220 BUFF

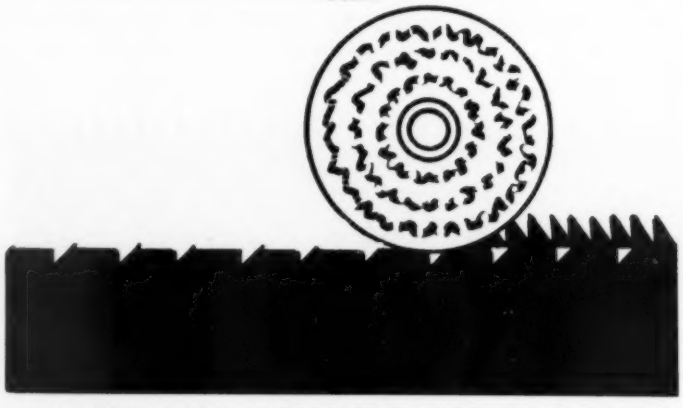
lated buffs, such as the air way are often used. No buff by itself can perform the buffing operation. It is the medium for carrying polishing composition which in turn does the work on the polished surface of work carried to it.

The most important factors to be considered for buffing could be summed up as follows:

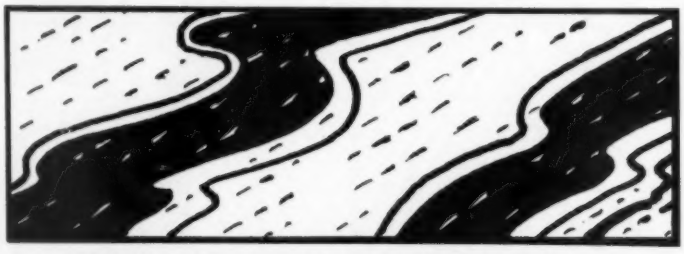
1. Density of the buff.
2. Surface speed of the buff (can be and should be higher than speed of polishing wheel.)
3. Proper composition for the desired finish. (It must be greasy enough to lubricate the buff to prevent burning, but contain sufficient cutting material to refine the polished surface of the work.)
4. In order to maintain a good surface head the buff must be of sufficiently high count to prevent excessive fraying.
5. A well lubricated buff will not burn at the surface. (The tripoli or composition used should be applied little and often. Centrifugal force will throw excess amounts from the face of the buff.)
6. Occasionally the face of the buff should be raked or opened up to avoid excess matting where the composition may be running a little on the greasy side.
7. Pressure against the face of the buff, particularly in the case of automatics should not be excessive. (Excessive pressure generates greater frictional heat and slows down the speed of the buff.)



MAGNIFIED VIEW: SHORT CUTTING A #220 ABRASIVE OVER A #60 CLOSES OVER THE ROOTS OF THE #60 CUT



MAGNIFIED VIEW: SUBSEQUENT BUFFING WHEEL EXPOSES VOIDS FROM #60 ABRASIVE. THIS CONDITION IS OFTEN MISTAKEN FOR CASTING POROSITY.



TOP VIEW MAGNIFIED: FINAL POLISHED SURFACE SHOWING VOIDS AND DRAG MARKS OFTEN REFERRED TO AS "FROG EYES" OR "PIG TAILS"

A final operation is often performed which is referred to as "color buff." It is mainly a wiping operation performed with very little pressure and with a very dry composition usually high in lime content, and softer in texture than tripoli.

NEMA 3-MONTH FIGURES

The National Electrical Manufacturers Association has released the following sales figures for the first three months of 1955: electric ranges, 387,431; electric household refrigerators, 1,040,367; electric farm and home freezers, 173,937; electric storage water heaters, 167,959.

AHLMA MARCH FIGURES

Sales of standard-size household washers in March totalled 370,555 units, 20.4% over March, 1954, according to the American Home Laundry Manufacturers' Association. Automatic tumbler dryer sales were 107.1% over March, 1954, 113,498 units as compared to 54,796. Household ironers sold in March aggregated 7,750 units, 28.6% over 6,025 units sold in March last year.

EPON® RESIN does it!

a tougher, more corrosion-resistant primer for metal lawn furniture . . . *at lower cost*

New Epon primer, formulated by The Glidden Company, Cleveland, is the key to a better finish on metal lawn furniture.

HERE'S HOW...

EXPOSED to blistering sunlight, rain, and often to corrosive salt sea breezes—lawn furniture must have a tough, corrosion-resistant finish.

For this reason, the Troy Sunshade Company has set high standards of durability and appearance for finishes on its quality metal lawn furniture. When metal shortages made it necessary to abandon chrome plating, Troy engineers made a careful study of paints and paint-finishing methods. Tests showed that the *primer* coat was the key to paint durability . . . *and that an Epon resin-based primer gave improved appearance and the highest degree of resistance to corrosion.*

The Epon resin-based primer is applied by rotary spray coating. The finish coat is applied by electrostatic spraying. Both operations are completely conveyorized. Thanks to the excellent adhesion and leveling properties of the Epon primer, expensive sanding operations are reduced to a minimum. Troy engineers estimate that the new finishing system saves as much as a dollar a gallon on materials, in addition to savings in labor costs.

• • •

Call on our sales offices for names of suppliers who sell Epon resin coatings. Write for the full Epon coatings story in the new brochure, "Planning to Paint a Pyramid?"

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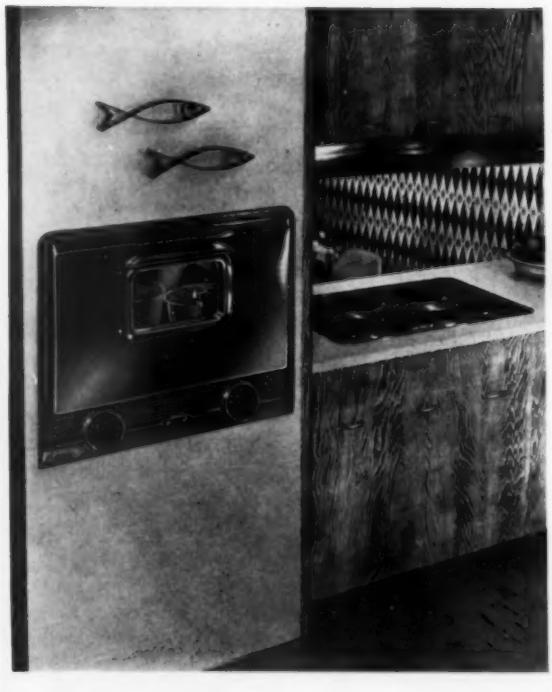
FOR
WESTINGHOUSE

PERMA-VIEW

the window you can see through always!

"out of our carton— into your door"



Yes sir, it's as easy as this. The PERMA-VIEW oven door window comes to you ready for immediate installation in your range — to add a sales feature second to none.

The strong steel encased, double pane PERMA-VIEW window incorporates the finest quality heat resisting glass. It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." This "non-fog" window meets the constantly growing demand for "visible baking."

More and more range manufacturers are turning to PERMA-VIEW as a practical, economical and effective sales feature for their new models. We will gladly work with your engineering department in adapting its use to your range. Write or phone for complete information.

Phone MArket 4-2256

The new WESTINGHOUSE built-in oven is 24 inches wide and is equipped with a PERMA-VIEW window. The PERMA-VIEW window plus a light inside the oven make it possible for the user to see inside without opening the door.

MILLS PRODUCTS, INCORPORATED

1015 W. MAPLE ROAD • WALLED LAKE, MICHIGAN

Coppertones in porcelain enamel

including a brief description of the application process at Samuel Stamping & Enameling

WITH the apparent increase in popularity of copper and copper-plated surfaces for appliances, kitchen accessories, etc., there has been keen interest for many months in the possibility of simulating copper or at least getting a "coppertone" in a porcelain enameled finish.

The first reported production application of a finish of this type was from Samuel Stamping & Enameling Company, producers of gas cooking and heating appliances, gas and electric "Suburban" built-in ovens and surface units, etc.

To get a current check on the acceptance accorded this type of finish as well as a few pertinent details with respect to its application, *finish* editors checked with Charles H. Dickas, vice president and general manager of the company.

Concerning the acceptance of the finish, Dickas had this to say:

"Since our adoption of 'Copper-Tan' finish, we have shown in approximately 70 home shows throughout the United States and, in most instances where 'Copper-Tan' has been shown, it has stolen the show. The consumer interest on this new finish is terrific. We have numerous testimonials from our distributors and dealers elaborating on the success that has been met with 'Copper-Tan' which is, of course, the finish that has all the beauty of copper and none of the upkeep.

"As you know, 'Copper-Tan' is a special blend of porcelain enamel to give the effect of a copper finish. It is acid-resistant with an extremely hard surface and is resistant to all alkalis that it may come in contact

to Page 78 →

A kitchen installation showing the "Suburban" built-in range. Similar installations have been shown in approximately 70 home shows throughout the United States.

So Resistant it's tops for home laundries

Guardsman®

PERMAGARD PRIMER

TYPE: Epoxy

COLOR: Gray

APPLICATION: Flocoat, dip or spray

BAKE: 20 min., 375°

GLOSS: High

FLOWING: Excellent; minimum variation in film thickness

FLEXIBILITY: Excellent

STABILITY: Excellent when dipped or flocoated

ADHESION: Excellent to steel, aluminum; good on zinc, cadmium

RESISTANCE: Excellent to detergents, humidity and salt spray

USES: Laundry Equipment, Air Conditioners, Shower Stalls, Beverage Filling Machines and Dispensers, Undersink Cabinets, Dishwashers.

The Better the Finish, the Better the Buy

GRAND RAPIDS VARNISH CORPORATION

MAKERS OF THE FAMOUS Guardsman® FINISH AND Guardsman® CLEANING POLISH

GRAND RAPIDS, MICHIGAN

Members of panel on "trends in appliance design", left to right: Helen Kendall, Good Housekeeping; R. O. Warner, Hotpoint; K. R. Cook, American Kitchens; E. K. Clark, Westinghouse; G. M. Hunt, Designers for Industry; and E. H. McNeice, Detroit Edison. Not shown is Glenn Beyer, of Cornell.

Appliance technical conference spotlights built-in appliances

illustrated with finishfotos of panel members

REPORTED BY *Matt E. Heuertz* • ASSOCIATE EDITOR

THE sixth annual Appliance Technical Conference of the American Institute of Electrical Engineers, devoted this year to the theme of built-in appliances, was held in Cleveland, Ohio, May 23-24, where the first conference was held just five years ago.

Sponsoring AIEE committees were the Committee on Domestic and Commercial Applications, headed by chairman T. C. Johnson, of General Electric Co.; Sub-committee on Domestic Appliances, headed by chairman B. F. Parr, of Westinghouse Electric Corp.; and the AIEE Cleveland Section, headed by chairman J. H. Fuller, of Reliance Electric & Engineering Co.

A look into the future

In the keynote address, R. J. Sargent, manager of major appliances, Westinghouse Electric Corp., presented an illustrated forecast of the future growth of electric power use with particular attention to domestic applications.

Sargent mentioned the tremendous growth of the industry in the past 25 years by pointing out that in 1930 there were 19 different electric appliances, with kwh consumption in the average home of 540. Today there are 54 electric appliances, with the average home using more than 2330 kwh.

Looking at the market for the next 10 years, Sargent pointed out that there will be 21,000,000 more people in the United States by 1965 . . . . 3,500,000 families will move each year . . . . in 10 years there will be $52 billion more in personal disposable income . . . . more than a million new homes will be built each year . . . . there will be more conveniences, more comfort and more home entertainment . . . . in the next five years alone the industry should sell 428,000,000 appliances.

The need for adequate wiring and adequate selling

Sargent concluded that if the industry is to meet its goal of 428,000,000 appliances, it will have to solve two basic problems. The first is adequate wiring for new as well as old homes, and the second is adequate selling. "We will have to sell hard, and will have to ask people to buy", he stated.

Symposium on recent trends in appliance design

thumbnail sketches of individual comments on built-in equipment

A highlight of the conference was a symposium on "Trends in Appliance Design with Emphasis on Built-In Equipment."

Following a presentation of "The Homemaker's Viewpoint" by Mrs. Helen W. Kendall, director of appliances and home care, *Good Housekeeping* (see Page 44), a panel of authorities in the field, including representatives of appliance manufacturers, presented their views on the subject.

Following are thumbnail sketches

of comments by individual panel members:

R. O. Warner, manager of range engineering, Hotpoint Co., Chicago, Ill.

"We got into the built-in field just a year ago . . . . Installation costs are about the same as for regular free-standing ranges . . . . Life of units is much the same as free-standing units . . . . Height designed to be very flexible . . . . Built-in ovens about 24-36" from floor in new homes . . . . Two-oven units present a wall space problem . . . . Built-ins can have all the features of free-standing ranges — if the homeowner will pay for them . . . Built-ins actually provide for more storage space."

Prof. Glenn Beyer, director of Housing Research Center, Cornell University, Ithaca, N. Y.

"The important feature of built-ins is that of separate units from the standpoint of function and usage . . . . Range surface units should be closer to the sink than the oven unit."

K. R. Cook, asst. to the general sales manager, American Kitchens Division of Avco Mfg. Corp., Connersville, Ind.

"Built-ins are providing a transfusion for the appliance business, but some dealers are not smart enough to see it . . . . Both color and built-ins helped create obsolescence accidentally . . . . American Kitchens is aiming at the do-it-yourself market with a 'knock-down built-in sink'. Following publicity on this knock-down unit, we received letters from all over the country regarding this do-it-yourself unit . . . . Color is a shopper-stopper."

E. K. Clark, manager of appliance engineering, Westinghouse Electric Corp., Mansfield, Ohio

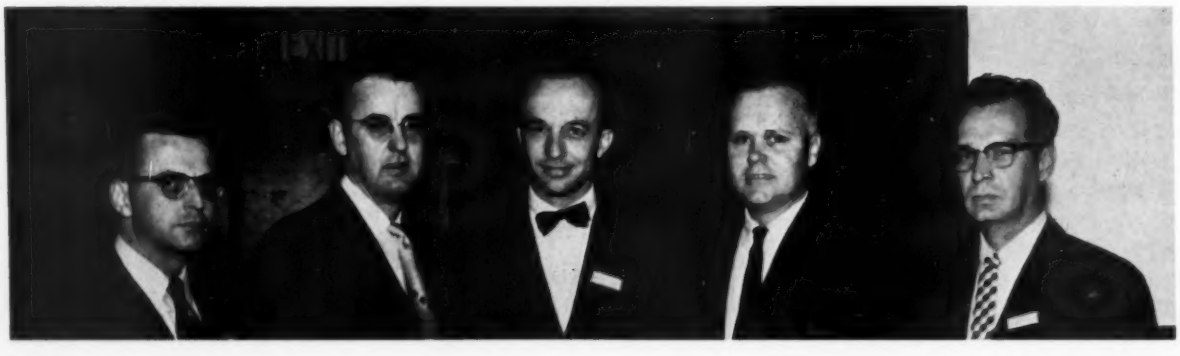
"Regarding built-ins, we feel that we may be too far from the average homemaker . . . . Built-ins will cost more for service . . . . The replacement market will be more difficult to sell . . . . Challenge will now be to improve the free-standing models . . . . The built-in trend could go toward a few hot plates and special cooking appliances."

E. H. McNiece, Detroit Edison Co., Detroit, Mich.

"A family shouldn't have to move appliances from home to home and

Speakers at the conference included, left to right: Above — E. H. McNiece, Detroit Edison, "Installation and Service Considerations in Built-In Appliances"; R. J. Sargent, Westinghouse, "A Look into the Future"; Prof. Glenn Beyer, Cornell, "Kitchen Layout Studies." Below — B. B. Krammes, Hoover, "Flash Type Steam Iron Design"; C. H. Fuchs, Westinghouse, "Statistical Methods Applied to Automatic Washer Tests"; and A. D. Smith, Westinghouse, "Surface Emissivity as a Factor in Appliance Design."

Below: J. H. Robinson, General Electric, "Effect of the Built-In Trend on Design Installation"; K. B. Smith, Globe American, "A Proposed Small Appliance Center"; Paul Brandt, Reynolds Metals, "Aluminum in Appliances"; E. W. Harrison, General Electric, "Major Appliance Color"; and R. W. Fauquet (moderator), Sears-Roebuck.



the Cornell kitchen

Left: In this arrangement the serve, range and sink centers are on the left with the mix, oven and refrigerator on the right. As lighting is an integral part of the unit, sloping cupboards are used to permit light to fall on the entire work counter.

Below: Installing mix center in a Cornell kitchen. Vertical spacers into which the counter-top fits can be adjusted up to 6-inch variations. The pull-out trays in base cabinets can be adjusted vertically.

then worry about their fitting in kitchen spaces . . . . Next to the bathroom, the furnace was the first built-in."

Guilbert M. Hunt, staff member, Designers for Industry, Cleveland, Ohio

"Built-ins should have perfect reliability . . . . May add up to 15% to the cost of the building structure in new homes . . . . More space required for proper utilization, but better use of space left over . . . . Gadgetry in built-ins may lead to faster obsolescence . . . . A good 7 years is long enough for any appliance . . . . Oven height should be 28-30″ from floor . . . . In the kitchen the housewife will continue to work in a rectangular or square area that is free of hindrances (such as island units)."

The work center concept of the Cornell kitchen

Glenn H. Beyer, professor of housing and design, and director of the Housing Research Center at Cornell University, discussed the Cornell Kitchen which was developed through basic research into the human requirements in kitchen planning.

The Cornell Kitchen was designed according to the concept of the kitchen as a series of four work centers — the mix, sink, range and serve areas, plus oven and refrigerator units that are kept separate because of their size. Lighting, ventilating fan, electrical wiring outlets, sink, dishwasher, refrigerator, oven and range burners are all built-in, as are various accessories.

The individual centers have only to be assembled and moved into the desired kitchen arrangement. The work centers do not depend upon the kitchen walls for support as both upper and base cabinets are demountable. Two sizes of tapered upper cabinets are interchangeable at any of the four work centers. Sloping cupboards let the light from valence fixtures fall on the entire work counter.

Countertops can be adjusted to the housewife's height with the addition or subtraction of spacers just under the top. Toe space of 3″ is provided under all base cabinets to prevent storage of items below that point — which would require excessive stooping. Base cabinets have a new type of door which opens out and then disappears into a "pocket" in the center of the cabinet — making it easier for the housewife to get at supplies stored in the cabinet.

Other kitchen features

Sink center has knee space so that the housewife can sit down while doing work at this center where she spends the most time. *to Page 75* →

You can't pinpoint consumer opinion on BUILT-IN

a guest editorial

by Helen W. Kendall • DIRECTOR
OF APPLIANCES AND HOME CARE, GOOD HOUSEKEEPING INSTITUTE, NEW YORK CITY

AT THE very beginning of this discussion, I want to make one thing quite clear. I am a long way from having the answers to the consumer viewpoint on built-in appliances or to the whole built-in kitchen concept. As a matter of fact, at this stage in their development, I doubt if it would be possible for anyone to pinpoint consumer opinion. True, streamlined built-in range units have been on the scene fifteen or more years, but it is only within recent months that they have come within sight of the average consumer. The best I can do is to indulge in a sort of free wheeling discussion.

Built-ins and mink stoles

In fairness to *Good Housekeeping*, I should report that we have talked to as broad a group of women as it was possible for us to find in an attempt to arrive at some of the real answers. The trouble with surveys or studies on this subject is the fact that so few women have any basis for comparison. Take women who don't own built-in ranges — they will tell you that they think the built-ins are wonderful — they save so much space — they save stooping and peeking into the oven — women can't wait to have one in their own kitchens. Now actually these women have little other than a sketchy idea of what a built-in really is. They have seen them in magazines, showrooms and model houses to be sure, but they have no conception of what built-in units cost or what it means to get them installed and vented. The only picture they see is the gleaming stainless steel or copper oven in a beautiful brick or paneled wall. So I guess asking women about built-ins is something like asking them if they would like a mink stole, and it is plain that no amount of polling of such women would be worth the time it takes.

Women, builders, architects and husbands

Some of the most thoughtful information, of course, which we have had has come from the women who own built-in ranges and have used them for at least six months or so. We have reports from at least fifty or sixty in different sections of the country and in different income brackets. In reviewing these, though, we must always bear in mind that a woman who has acquired so advanced a thing as a kitchen with built-ins will rarely reflect anything other than an enthusiastic attitude. Occasionally a woman will be quite objective but, more often than not, she turns out to be a woman who had the built-ins more or less forced on her by the builder, the architect or her husband. What we gained by all these visits were some concrete examples which corroborated our own thinking and our own findings in our laboratory kitchens. So in spite of our efforts to deal with this big question in a "scientific" sort of way, I find myself right back at home base and must take full responsibility for the ideas and questions I am about to toss out to you.

Most of what I have to say applies to all built-in appliances — the refrigerator, the freezer and even the dishwasher which, after all, was the first built-in. If I seem to refer more frequently to the range, it is merely because it is the fast-moving built-in appliance of the moment and the one that is getting most of the attention. And another thing — if I sound somewhat negative, please don't jump to the conclusion that *Good Housekeeping* is basically opposed to built-in appliances. Nothing could be further from the truth. We favor every new and worthwhile concept which promises some measure of improvement in family life. This is why we constantly spur our readers to want and reach out for the new appliances that bring so many benefits. But this big country is so set up economically that benefits for the many can come about only through high production and high consumption. To get this high consumption we must of necessity create obsolescence. Frankly, I have never liked to hear appliance people use this word because it seems to me to imply only self-interest — and not quite worthy of our really fine appliance industry. But, whatever we call it, the important fact is that, if this rosy future for all is to materialize, we must be sure every move we make (or most of them anyway) is in the right direction.

For long range acceptance, look closely for flaws

If we are interested in the long range sale of built-in appliances, and not merely in current builder acceptance, we must look for the flaws in the present models and find the way to eliminate them. We must design not only for the new home custom installation, but for simple installation in existing kitchens. We must make servicing of built-ins easy. And we must build long life into these appliances. After all, the whole kitchen is planned around them. We can't have a built-in refrigerator conking out after a few weeks when replacing it would mean dismantling part of the kitchen.

I believe we must give a clean bill of health to all built-in appliances from the looks or appearance standpoint. There *have* been some mighty beautiful installations. Even the stack-ons which are all that we have in our laboratory kitchens at the present bring ohs and ahs from the women who traipse through. They are new, and they are different, and they do have appeal.

-IANCES
but here's a "free wheeling" discussion

But let's get into the functional side of the built-ins. And I'll begin with the height of the built-in oven because it seems to be the prime sales factor. Has there been enough basic research on oven heights? Can we assume one height is acceptable for all women? And what happens when women want two ovens? Doesn't placing one above the other pose a problem? Placing the ovens side by side might be the answer in some kitchens, of course, but would take a lot of precious wall space. So this matter of suitable heights for installing appliances is something that should be considered pretty carefully.

The "reach-up" refrigerator

We have not had too much experience as yet with wall refrigerators but certainly there must be no compromise here. A refrigerator that has shelves out of reach of the cook, just isn't a refrigerator. Believe it or not, in one of the homes I visited, the housekeeper told me she had to use a stool to get foods from the top shelf of her in-the-wall freezer and refrigerator. In one or two display kitchens, I have seen dishwashers at waist height. I've never used one in this elevated position but I'll say right now that I wouldn't like it, and I would hate to see the idea fostered. Reaching up to put dripping plates into a dishwasher just doesn't apeal.

The next phase of built-in appliances I'd like to cover is general design and the advantages or disadvantages they offer. I am thinking, of course, of convenience features and not just change for change sake. After all, if these built-in appliances are the answer to obsolescence — if they hold the key to the huge replacement market, they must earn it.

Questions for the range manufacturer

Does the built-in oven and separate top range at its present stage of development offer all that a good self-standing unit offers? What about location of controls and automatic clock? If they will be affected by heat and need replacement oftener, are we going forward or backward? How about that timed convenience outlet on our ranges which so many families use every day in conjunction with portable appliances — the coffee maker particularly, and sometimes a roaster. Doesn't present design limit the use of the automatic clock to the oven? Seems to me we all thought these pretty important at one time.

The rotisserie? Is it important enough to be included in range design? Should the top section include a griddle? All these things must be carefully thought through if you are going to satisfy the one who will eventually hold the whip hand . . . the woman who owns the kitchen. Yes, the builder looks up as No. 1 man now, but not forever. You know how quickly he'll switch when women won't buy his houses and ask for costly changes.

Somewhat related to the design and functional value of the built-in range (again because we know so little of other built-ins) is the way in which the use of built-ins affects the general plan of the kitchen. My questions are these: Are built-in range units suited to all kitchens? Do they always save space as women think they do, or are there conditions where a self-standing is better suited? When built-in range units are placed side by side, what is gained over the conventional range other than the height of the oven?

Now for my last point. I haven't the foggiest notion what the final answer may be. Perhaps no one has — not even the motivation boys. But it's important to all of you who are appliance manufacturers or kitchen planners. It's this. What does a woman want in her kitchen? Pure function, in a laboratory sort of way? Obviously not. Beauty and glamor at the cost of function and convenience? Again, I would say no. But a happy combination of the two with enough flexibility to fit all or most social and economic patterns may prove to be the answer. Don't forget that the food industry is doing its very best to get women OUT of the kitchen, not keep them IN it.

So I would like to sum up the points I have tried to make this way. And once more, if I have seemed to any of you to be negative, it is because I recognize that, if we are interested in the long range sale of built-in appliances, and not merely in current builder acceptance, we must look for the flaws in the present models and find the way to eliminate them. We must design not only for the new home custom installation, but for simple installation in existing kitchens. We must make servicing of built-ins easy. And we must build long life into these appliances. After all, the whole kitchen is planned around them. We can't have a built-in refrigerator conking out after a few years when replacing it would mean dismantling part of the kitchen. It's asking a lot, I know, but I know this wonderful appliance industry pretty well and am sure it will come up with the answers.

Editor's Note:

Helen Kendall headed a discussion panel on built-ins at a recent Appliance Technical Conference of AIEE in Cleveland, Ohio. You will find a few thumbnail sketches of comments by appliance manufacturers' representatives and other authorities in the *finish* meeting report starting on Page 41.

STAINLESS STEEL

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FOR

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John Lees

DIVISION *The Serrick Corporation, Muncie, Indiana*

Appliances for tomorrow

this special report on the future of the appliance and kitchen supplier industries contains a review of general trends in home living with regard to their influence on the "kitchen of tomorrow"

PART I

by Dave Chapman • FELLOW, SOCIETY OF INDUSTRIAL DESIGNERS

Exclusive feature finish

Today the kitchen, more than any other area of the home, is the focus of intense interest for the home appliance manufacturer and homemaker alike.

Appliance and kitchen supplier industries are searching almost frantically for answers to the dual problems of color and the built-in approach. They want to get the market while it is "hot," but are faced with immediate problems of production, merchandising and warehousing. They are being led toward custom-line rather than familiar mass-merchandising techniques.

Homemakers are obviously enthusiastic over the prospects of all this custom-attention to their needs. But if they are not crowding toward the "new product" bandwagon in droves, it may be that they are waiting for a few more positive reasons to dig into the mattress money to buy new equipment or replace the old.

Editor's Note:

Where is the appliance and kitchen suppliers industry going? What is the basis of research for new product development? Industrial designer Dave Chapman, of Chicago, one of the nation's foremost designers of appliances and equipment for the home, supplies an approach to research study which he has followed for more than 20 years of product, package, display, architectural and engineering design.

We are certain that the author would not expect our editors or our readers to agree with all the points he presents, but there should be food for thought in this presentation for *every finish* reader.

The industry is asking — "Well, just what does the homemaker want? We are giving her color. We are giving her better styling. What else is there?"

If more manufacturers of kitchen equipment would break away from their study of competitors' merchandising and pricing systems, they could probably answer the questions from an honest investigation of their own homes.

The industry must get to the roots of the question and study people and their way of living. There have been some other changes besides television since we were kids.

What the buyer really wants, as

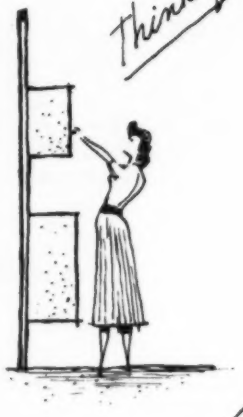
to Page 78 →

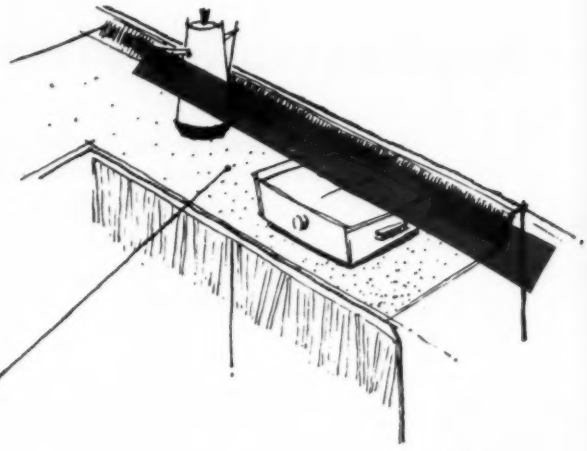
Sketches of Tomorrow's Appliances →

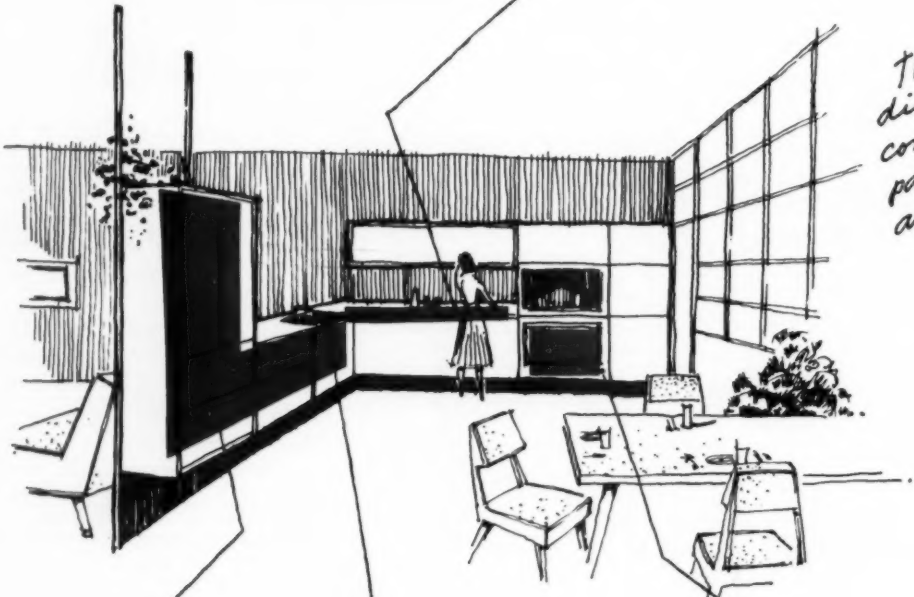
The design of "future" equipment is a much more practical procedure than idle push-button dreaming. In regular conferences, the representatives of the designer's office meet with representatives of all departments of the client organization to exchange knowledge of those things which effect the trends of appliance design. This series of photos illustrates a client meeting between Dave Chapman (left photo) and the Chapman office account executive, Bill Winterbottom, with Ben Derr, product specialist of International Harvester, Ted Koeber, I-H resident design consultant, and members of their staff. The meeting was held in the new product test area of the Chapman office.

Mems to Staff:
Directions for thinking —
new product development
Dore A

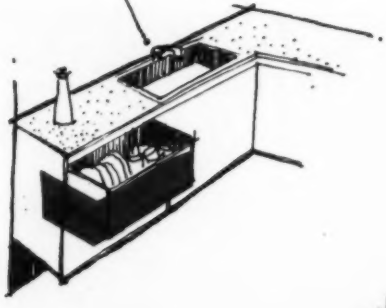
Think of the user !!!

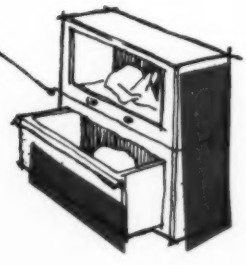






The range is disappearing — continuous plug panel will supply automatic utensils



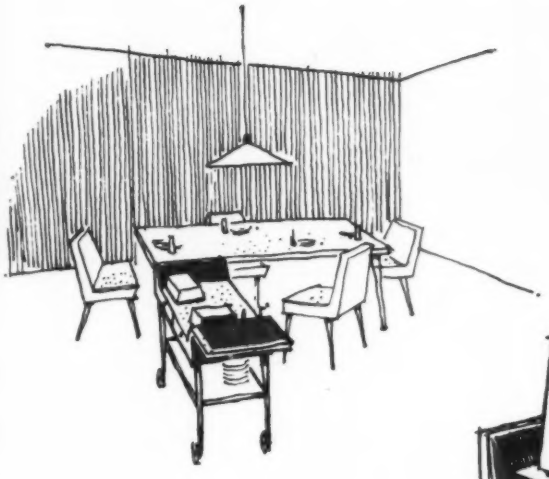


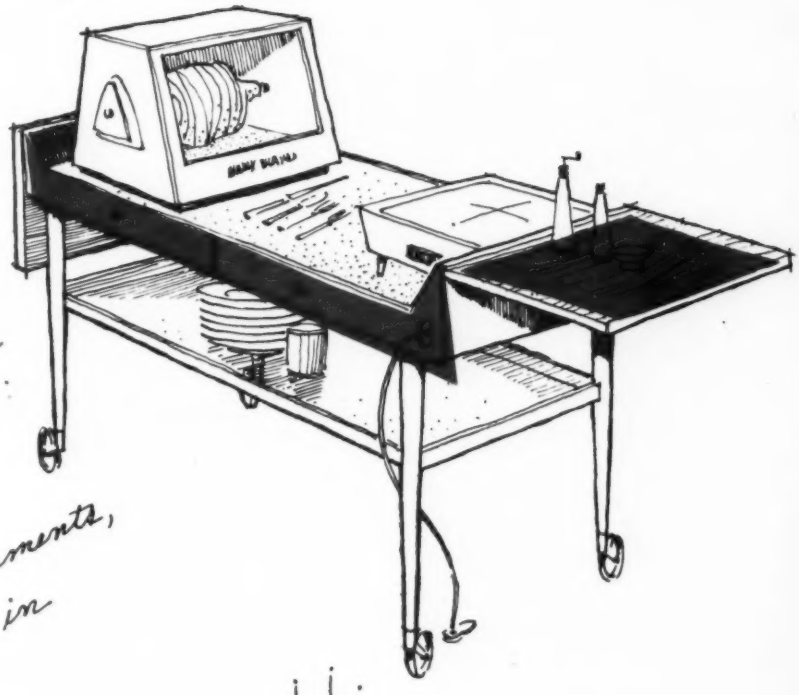
Refrigerator units wall hung - shallower, wider.
Freezer drawers

Sink, cabinet, dishwasher units wall hung at heights to custom-fit the user.

Ovens shallower, wider.
Needed: new unit "Electric defroster oven"

As living patterns change, appliance design must change to meet the new pattern. Mobility, multiplicity of use, flexibility are all important.





Service directly from the new automatic cooking devices points to need for mobile cook-warm serve cart for table use.....

.....or service of refreshments, hot hors d'ouvres, etc. in conversation area.

Here's Positi

Telephone
MARKET 4-2256

MILLS PRODUCTS • Incorporated
Manufacturers of
PERMA-VIEW Sealed OVEN DOOR WINDOWS

1015 WEST MAPLE ROAD
WALLED LAKE, MICHIGAN

June 10, 1955

Mr. Dana Chase
FINISH Magazine
York Street at Park Avenue
Elmhurst, Illinois

Dear Mr. Chase:

We have now completed our fifth year of monthly advertising in FINISH Magazine to take our story of PERMA-VIEW windows to the appliance manufacturers. As you know, we have used your publication exclusively during this period. As at the end of each previous year, I will give you a report on our sales results.

At the end of three years of consistent advertising, we reported that our sales had increased 400% and that a new plant had been built.

Last year, at the end of our fourth year of advertising, we reported an addition to our production facilities and a gain in business of 686% compared with the year before we started advertising in FINISH.

It is a pleasure to report that now, following the close of our fifth advertising year, we show a gain of 92% for the 12 months just concluded over the preceding 12 months. This, in turn, shows a total of 1302% gain for the past year when compared with the year preceding the start of our advertising campaign.

As you know, we have plans for using your publication for the sale of a broader line of products to the home appliance industry, but the rapid expansion of our business on PERMA-VIEW windows has prevented the expanding of our line to date. Any future expansion will come only as we expand manufacturing facilities and organization to assure continuance of the quality and service that our customers have come to expect.

We look forward to the continued support of your publication during the coming months and you may feel free to use this letter in any way you desire.

Yours very truly,

MILLS PRODUCTS, INC.
Herbert E. Mills

Herbert E. Mills

OVEN DOOR WINDOWS

CHROME TRIM

HANDLES

ive Proof...

DVERTISING RESULTS

....the story of PERMA-VIEW advertising in

1302% increase in sales in 5 years

The first **PERMA-VIEW** ad appeared in July 1950 *finish*. Mills Products, Inc. has carried a continuous campaign of one black and white page each month for five years except for three months when two color spreads were used.

What were the results of this continuous campaign?

100% increase in number of accounts served, and inquiries from all over the world, within the first year. The second year saw a continued increase in customers at the same rate.

The accompanying letter tells the story of a 1302% increase in sales—within the span of a five year advertising campaign.

Here is one of the rare instances where advertising results can be definitely measured . . . because . . . Mills Products, Inc. travels no field men, all contacts being made by the principals from the factory . . . and . . . *finish* is the only advertising medium used for promoting PERMA-VIEW windows.

Here is POSITIVE PROOF that if you have the right material, equipment, component or service for the home appliance and metal products manufacturing field . . . and present it properly in *finish* . . . the men who engineer and build the metal products plus those who purchase for and manage the producing plants will respond.

NOTE — Mills Products, Inc. serves only one segment of *finish* readership — the producers of gas and electric ranges — *finish* circulation covers the key men of *all* appliance producers plus a broad group of other metal products manufacturers.

BPA NBP

the only industrial trade publication completely blanketing the home appliance and allied metal products industries

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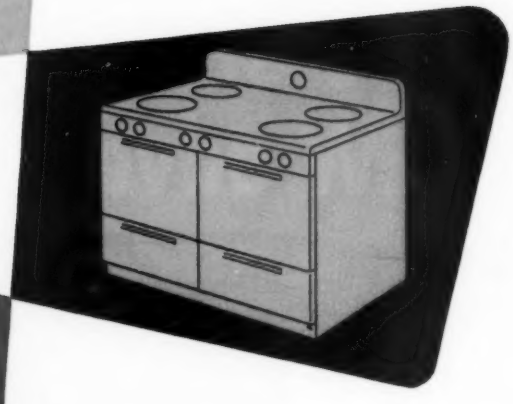

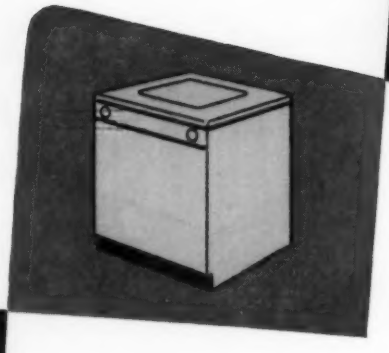

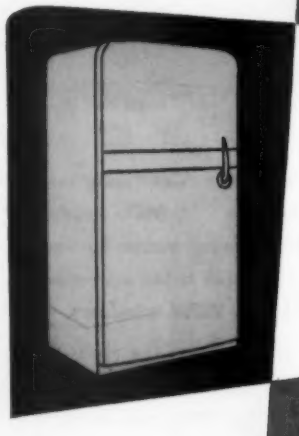

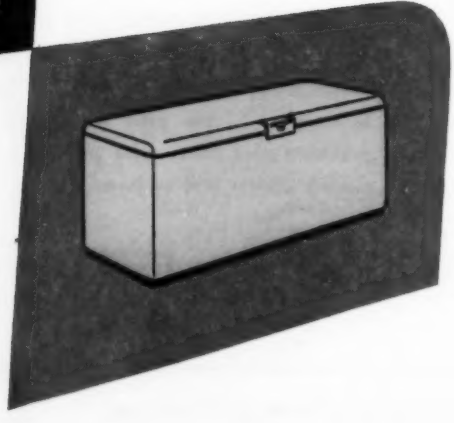

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Appliance men discuss built-ins, discount selling, motivation research

Fisher elected president of the Institute of Appliance Manufacturers

THE Institute of Appliance Manufacturers (formerly Institute of Cooking and Heating Appliance Manufacturers) held its 23rd annual convention at the Netherland Plaza Hotel, in Cincinnati, on June 6, 7 and 8. The meeting was well attended and a number of new suppliers to the industry showed their products in the industry exhibit in addition to the "regulars" who have been exhibiting over a period of years. One trend that was noticeable at the 1955 meeting was an increase in the number of wives of members and associate members who made their appearance for the social activities forming a part of the convention program.

Frank Fisher heads association

Heading the slate of officers for the coming year as elected at the meeting, is W. Frank Fisher, vice president and general manager of The Floyd-Wells Co., division of John Wood Company, Royersford, Penna.

New IAM Officers

President: W. Frank Fisher, vice president and general manager, The Floyd-Wells Co., division of John Wood Co., Royersford, Pa.
Exec. Vice Pres.: F. H. Guthrie, president, Newark Stove Company, Newark, Ohio.
Sec.-Treas.: S. B. Rymer, Jr., president Dixie Products, Inc., Cleveland, Tennessee.
Vice Pres. — Meetings: R. H. Taylor, president Florence Stove Co., Chicago.
Vice Pres. — Memberships: W. F. Rogers, president, Crown Stove Works, Chicago.
Vice Pres. — Publications: W. C. Davis, president, Cribben & Sexton Co., Chicago.

Retiring Institute president is F. Donald Hart, executive vice president, Temco, Inc. In his annual report to the Institute, Hart pointed to the air of optimism which pervaded the meeting in contrast to a less optimistic tone of the 1954 meeting. He referred specifically to the new concepts in design of appliances for the home and passed a large part of the credit for new products to supplier firms working in cooperation with the manufacturers.

In referring to built-ins, Hart said that, inasmuch as built-in appliances probably would not be as frequently replaced, care must be taken to provide for a fair profit for both the manufacturer and dealer. They must be built to be efficient, safe and convenient. Built-ins should be sold at a price to include proper installation and service.

The umbrella over discount selling

In a talk, "The Changing Appliance Market and Distribution," Laurence Wray, editor of *Electrical Merchandising*, described the major developments in an industry which has grown from one and one-half billion dollars in 1941 to close to seven billion dollars in 1954, with a volume of six billion dollars per year over a period of five years. His points included population growth, shifts in population, the revolution in distribution of income and the worthwhile increase in average family incomes.

In referring to the revolution in distribution, Wray made reference to the factory operated distributing branch, trans-shippers, mail order chains and the discount house. "Fair trade," he said, "is the umbrella over discount selling." He said that specialty selling died with product shortages and stressed the fact that selling "need" for a product and giving adequate service are incompatible with discount selling by dealers.

Motivation research

In his talk, "Motivation Research Versus Design Research," James N. Morgan, assistant program director, Survey Research Center, University of Michigan, gave comprehensive coverage of his subject and, while it was too complete to be covered in this brief report, we quote briefly from his comments. "Motivation research is a glorious name for what good researchers have been doing all along, or it may be a name for some incomplete part of it. Too much of what I have read leaves me with the impression that the emphasis is on the initial investigation, the development of hypotheses, which are then not tested but used for developing advertising campaigns. . .

"Research about consumer behav-

W. FRANK FISHER, IAM PRESIDENT

iour requires finding things that are frequent enough in the population to be important, and it requires proving that these things exist, ultimately by some form of statistical inference. My own experience is that reading questionnaires frequently reveals fascinating patterns of behaviour which turn out later to be quite infrequent and, therefore, unimportant. . .

"Too much research is directed at selling a line of products when attention should be directed to a much more basic analysis of the needs to be satisfied, and how best to satisfy them." " . . . Research is not a simple matter, the ingenuity of the engineer and disigner in interpreting needs and patterns of consumer behavior into new designs is a vital link in the chain, and the ingenuity of the promotion department in showing people how products will meet their needs remains essential whether it is the old products or the new ones."

finishfoto

Panel members for "manufacturing, designing and purchasing workshop", left to right: W. R. Mabee (presiding), Tappan Stove; J. Loren Freund, Diamond Match; Wallace M. Hollingsworth, Roper; and Alfred M. Blumenfeld, Rohm & Haas.

Space heating outlook

William R. Lund, manager of marketing research, Warren Petroleum Corporation, reported "The Market Outlook for Gas Space Heating." While Lund touched on the space heating market in general, his chief concern was with the small town, suburban and rural areas — the major market for LP-gas. He described this as roughly one-half of the gas space heating market.

In referring to the urban market, he quoted the Bureau of Statistics of the American Gas Association as indicating a market of more than a million new gas heating equipment customers for each of the past two years and for each of the next two years.

Marketed production of LP-gas, said Lund, has increased from 3,800,000,000 gallons per year in 1949 to 6,300,000,000 per year in 1954. In substantiating the market for gas heating, he said, "The fact is, about one-half of the homes in our country are 'beyond the gas mains' and thus are prospective customers for LP-gas space heating equipment. Of the 6,400,000 homes on farms, 5,400,000 are LP-gas prospects. Of the 10,000,000 homes in towns of less than 2500 population, 8,600,000 are LP-gas prospects and there are another five to six million homes in the surburbs of larger towns which do not have natural gas service. Thus, a total of 18,000,000 homes, or 45 per cent of the approximately 40,000,000 homes which are prospective gas heat customers, are in the LP-gas market area."

Ingredients for a strong company

In a talk on the subject, "Profit Potentials in an Expanding Market," Roy C. Ingersoll, president and chairman of the board, Borg-Warner Corp., outlined what he considered to be the ingredients for a strong company. Among his points were the following:

1. *Strong management* — The best executive is one who trains others to be better than himself.
2. *Imaginative research and development* — We need to spend more time developing appliances for tomorrow . . . built-ins will permit manufacturers to cash in on regular appliances with the interest created among consumers with the new products.

This photo shows only a portion of the crowd attending the jam-packed session devoted to built-in appliances. The speaker shown here is W. R. Milby, superintendent of customers service division, Detroit Edison Company.

finish

More and more women all over the country are requesting...
America's only Electric Timers with the exclusive Bell-Chime Signal
LUX Time
YOUR TIME-REMINDER LINE

THE LUX CLOCK MANUFACTURING COMPANY • WATERBURY 20, CONNECTICUT

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Billie Bischoff and LaVonne Breyer were on hand to greet appliance men at the booth of Century Products, a newcomer to the annual exhibit of industry suppliers at the IAM convention.

3. *Efficient production* — Using latest techniques . . . automation is as old as the industrial age, but gained interest with the advent of electronics.
4. *Fair prices* — When we know our company is operating efficiently, it is our responsibility to sell products at a fair price . . .
5. *Marketing organization* — No product is better than its marketing organization. We must sell distributors on adequate dealer coverage.

Mabee heads workshop

One of the sessions at the meeting was scheduled as "Manufacturing, Designing and Purchasing Workshop." This session, presided over by W. R. Mabee, vice president of The Tappan Stove Company, included a discussion of the labor relations outlook by J. Loren Freund, manager of industrial relations, Diamond Match Company; a demonstration of light and color in the design of plastic parts for appliances by Alfred M. Blumenfeld, head of the design group, Rohm & Haas Company; and a report on the supply outlook for basic raw materials by Wallace M. Hollingsworth, director of purchases, Geo. D. Roper Corporation.

Built-in appliances get the spotlight

An over-flow crowd attended the session for manufacturers of built-in appliances on Wednesday morning. Marc W. Pender, assistant general manager, American Kitchens Division — Avco, presided. It was a panel-type session in which a dealer, a distributor, a manufacturer, an architect, a builder and two utility company officers discussed the advantages and problems of built-in appliances.

O. W. McMahon, director of design and engineering, National Homes Corporation.

The advent of built-ins came twelve years ago, but only one or two years ago everyone started getting on the bandwagon. All new products are copies of the original while manufacturers should have developed newer, lighter, lower cost units to meet the *present* living habits. There is growing demand for homes with patios, barbecue pits, newer kitchens, etc. Portable appliances such as electric frying pans, griddles, are increasingly popular. The "double-use" unit is suggested for combining stationary use with portable use.

Refrigerators have been neglected as built-ins. Need for development. Drawers are suggested for part of the storage in new refrigerators.

Industry has not spent enough time and money and basic research, both as to type of products and even *heat sources.*

W. R. Milby, superintendent, customers service division, Detroit Edison Company

Ninety per cent of built-ins are going into new homes (in the Detroit area), 10 per cent in modernization. The homes are in the $16,000 to $25,000 price class. Eighty per cent of ranges for new homes furnished by builders are built-in.

Built-in sales can be tied in to the rewiring and modernization program. The modernization market is a separate problem from the new home market. To be successful with built-in appliances, the appliance dealer must set up a kitchen modernization department or divert the problem to others.

NOTE

More photos from the Institute of Appliance Manufacturers annual meeting will appear in the August issue of *finish.*

Consideration must be given to better insulation, particularly where two ovens are installed together. Other suggestions for the manufacturer include the following: (1) Should make as much of appliance servicing available from the front as possible; (2) Should be a means of leveling the oven; (3) Should be a means of adjusting the door spring without removal; (4) Should pro-

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Steel kitchen cabinet producers see continuing upward trend

Lawrence elected president of Steel Kitchen Cabinet Manufacturers Association

AN INCREASE of 20% in sales of steel kitchen cabinets during the first quarter of 1955, and a continuing upward trend in the current period was reported at the annual summer meeting of the Steel Kitchen Cabinet Manufacturers Association. Members of the association represent almost all of the major producers of steel kitchens in the United States.

Harry S. Lawrence, sales manager of Hubeny Brothers, Inc., Capitol Kitchens, Roselle, New Jersey, was elected president of the association.

At the same session, R. A. MacNeille, president, St. Charles Manufacturing Co., St. Charles, Illinois, was elected vice-president. Chosen new association director was Marvin J. Berz, president, Marvel Metal Products, Chicago; and reelected to the board of directors was C. D. Alderman, vice president and general sales manager of Youngstown Kitchens, Mullins Manufacturing Company, Warren, Ohio, whose term extends until 1958.

Lawrence has been serving the SKCMA as vice president during the past year and MacNeille has been a director. Lawrence succeeds C. S. Motter, vice president, Morton Manufacturing Company, Chicago, Illinois. New officers and directors take office July 1, 1955.

Arthur J. Tuscany, Jr., Cleveland, was reelected executive secretary-treasurer.

Richard E. Nellis, of Nellis Industries, Kreamer, Snyder County, Pa., was admitted to membership in the steel cabinet group.

Speaker at the meeting was Robert C. Myers, director of market development, United States Steel Corp., who reported on the success of "Operation Wife-Saver," the steel kitchen promotion launched this spring by U. S. Steel in behalf of steel kitchens. Final plans were outlined at the meeting for the celebration in September of the industry's second annual Steel Kitchen Cabinet Month. A dealer kit filled with display materials and advertising aids has been prepared for dealer participation in the event, and a special 8-page tabloid newspaper supplement which will be released to newspapers for publication of special

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Following the final session of the Steel Kitchen Cabinet Manufacturers Association meeting at The Greenbrier, White Sulphur Springs, W. Va., June 2-4, the group posed for this photograph on the lawn of the resort. Holding the association's banner is R. A. MacNeille (left), newly elected vice president of the association, and C. S. Motter (right), retiring president. In the center is the new president, Harry S. Lawrence.

Air conditioning group discusses new consumer-attitude research program

Emmett elected president of Air-Conditioning and Refrigeration Institute at annual meeting held at The Homestead, Hot Springs, Virginia, June 5-8

THE first consumer-attitude research program ever undertaken for the air-conditioning industry will be launched this summer, by the DuPont Co. Results of the study will be made available to the industry next fall as a guide to its promotion and advertising program for the 1956 season.

This was announced before the annual meeting of the Air-Conditioning and Refrigeration Institute by Robert J. Thompson, director of sales of DuPont's "kinetic" chemicals division.

Commenting on the announcement, James Emmett, Jr., who was elected president of ARI during the group's annual meeting at The Homestead, Hot Springs, Va., June 5-8, said:

"This study comes at a time when our industry is at the threshold of its greatest expansion. The market for air conditioning has grown tremendously in the past ten years. If it continues to grow at a comparable rate during the next five years, we should enjoy a 46-times increase by the end of 1960.

"A study, such as proposed by DuPont, can reveal certain consumer attitudes toward air conditioning about which we lack sufficient information. If this is so, it is entirely possible that we may have to revamp our promotional approach so that we can bring about an even greater rate of growth for our industry."

The market research study to be undertaken this summer will be the first of an annual series, Thompson told ARI members. The initial study will center around room air conditioners.

The survey will be conducted by an independent research agency, and will be conducted on a personal interview basis in urban centers all over the nation.

JAMES EMMETT JR., ARI PRESIDENT

Thompson pointed out that the "need for factual information on how people feel about air conditioning, why they buy it and what they like and dislike about it," is "one of the most pressing problems in the industry today."

Facts about how air conditioning affects the health and living habits of owners are also expected to be revealed by the survey. Subjects of the interviews will include non-owners of air conditioning equipment as well as owners.

Surveys to be conducted in later years will be devoted to such topics as central station residential air conditioning, commercial and industrial air conditioning and industry sales practices.

D. C. McSorley, advertising manager, of DuPont's "kinetic" chemicals division, and Joseph Hoopes, manager of the division's market research division, outlined the details of the survey.

Elect new officers

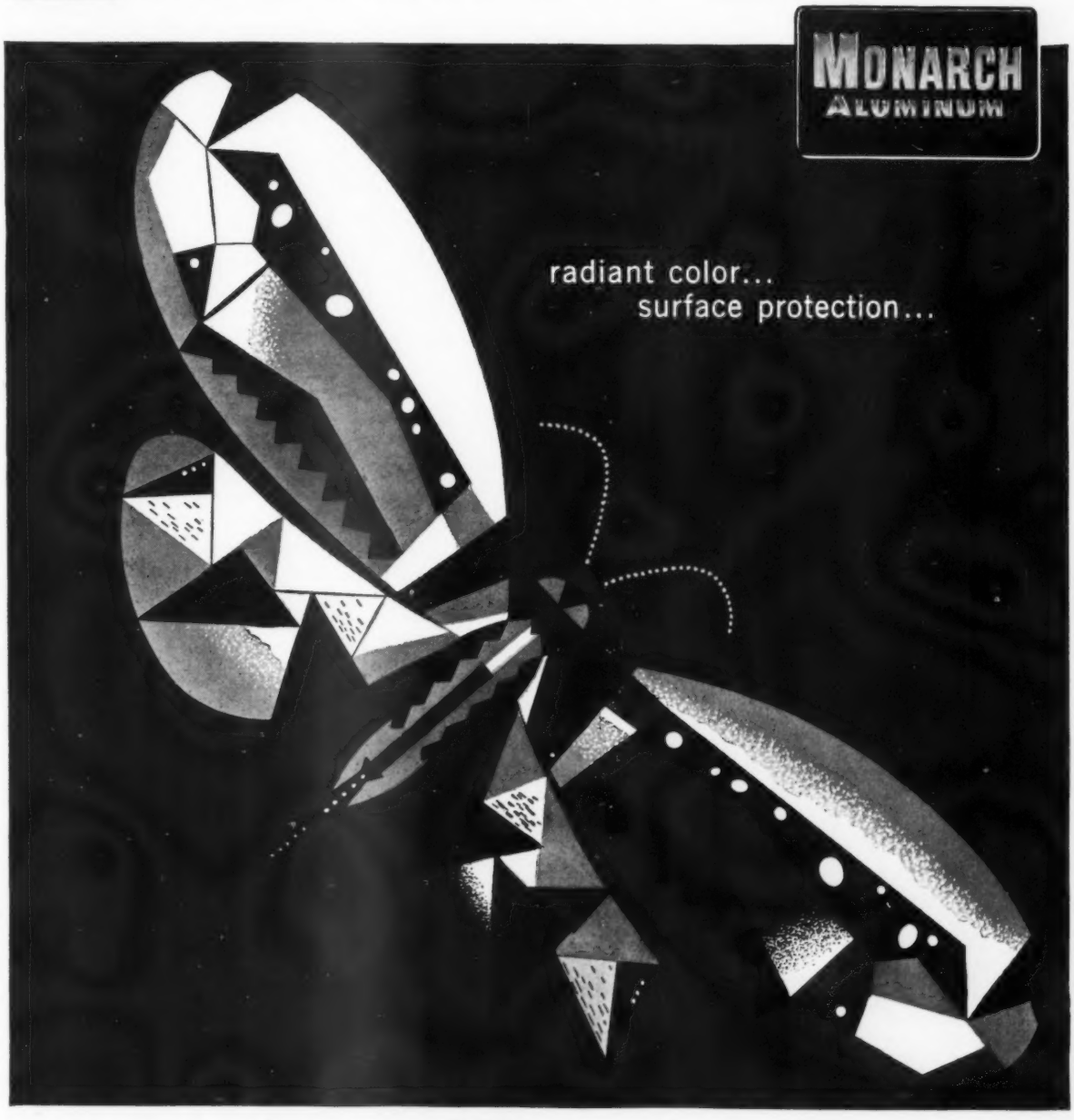
Besides Emmett, who is vice president of Jas. P. Marsh Corporation, Skokie, Ill., other officers elected by ARI were M. M. Lawler, vice president, Worthington Corporation, Harrison, N. J., vice president; and Lud Emde, president, Temprite Products Corporation, Birmingham, Michigan, treasurer.

Seven new members were elected to the 21-man board of directors for terms of three years. They were: C. E. Buchholzer, president, Airtemp Division, Chrysler Corporation, Dayton, Ohio; C. V. Gary, vice president, Henry Valve Company, Melrose Park, Illinois; E. B. Maire, vice president, Penn Controls, Inc., Goshen, Indiana; B. A. Mitchell, president, Mitchell Manufacturing Company, Chicago, Illinois; R. J. Powell, merchandising manager, the Marley Company, Kansas City, Missouri; L. W. Smith, manager, commercial and air conditioning sales dept., Frigidaire Division, General Motors Corp., Dayton, Ohio; and Lud Emde, president, Temprite Products Corporation, Birmingham, Michigan.

How can you use Monarch's new
vitreous enameled aluminum castings
to improve your products?

Here is a revolutionary new finish—pioneered by Monarch—for users of aluminum castings. Could this be your solution to problems involving colorful sales appeal and surface protection? Certainly such an outstanding new development is worth your investigation.

From housewares to hardware—industrial equipment to home appliances, vitreous enameled aluminum castings offer many new advantages—new uses. For specific information write for Monarch's new brochure—***"Vitreous Enameled Aluminum Castings"***.

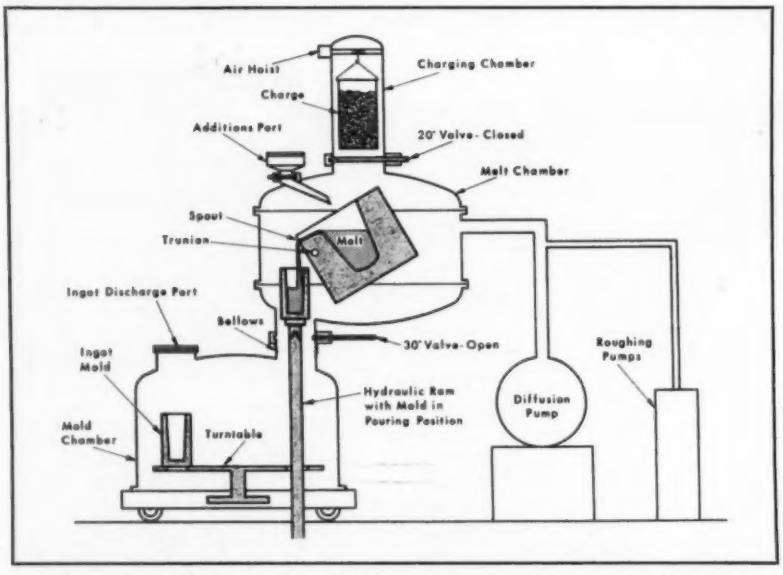


MONARCH ALUMINUM MFG. COMPANY—9205 DETROIT AVENUE—CLEVELAND 2, OHIO
MANUFACTURERS OF *Aluminum Permanent Mold Castings • Zinc Die Castings • Aluminum Die Castings*
Exclusive Velvaglaze Finishing • Vitreous Enamel Finishing — MEMBERS: CERTIFIED ZINC PLAN • AMERICAN DIE CASTING INSTITUTE

New Industry Developments

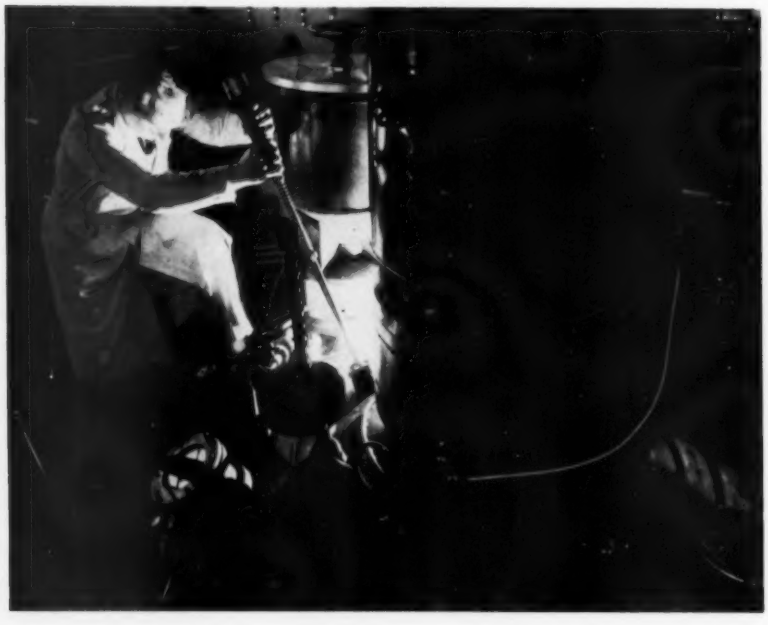
NEW SEMI-CONTINUOUS VACUUM MELTING FURNACE ADDS TO SPECIAL ALLOYS PRODUCTION

THE Carboloy Department of General Electrical Company reports that a new semi-continuous, 1000-pound vacuum melting furnace placed in operation in their plant in Detroit represents another step in alleviating metallurgical problems which have been creating a bottleneck at the designers' level.



Schematic drawing showing 1000-pound vacuum furnace installation at Carboloy plant in Detroit. Note how ingot mold is positioned for pouring, and how other ingot molds are indexed on turntable.

Metal in the furnace is liquified in about an hour with temperatures ranging from 2800 to 3200°F. Operator here is shown using a bridge breaker inserted in special port to break loose crusting action.



This panel controls any section of the vacuum system. It includes a schematic diagram of all vacuum lines tied in with indicating lights.

By adding more than 120,000 pounds per month of specialized vacuum melted alloys to the nation's capacity, the new pilot production unit should provide designers more leeway in selecting materials for advanced development work, as well as make it possible to create entirely new alloys from lower-cost, less critical elements than those produced by air melting.

Greatest uses currently for vacuum melted alloys, Carboloy engineers point out, are in the gas turbine field — for aircraft, locomotives, stationary power plants, etc., and in the airframe industry for such items as landing gears and aircraft struts.

In other areas, such metals may enable designers to break loose developments now bottlenecked on drawing boards because of unavailable or strategic materials. New alloys of low strategic value, produced by the vacuum-melting technique, it is pointed out, hold considerable promise for auto turbine rotors — to bring costs down.

In some instances, the vacuum melting process fosters the development and production of completely new families of metals and their alloys. For many existing alloys, melting in a vacuum so markedly improves their mechanical properties

that these, too, could be classed as new alloys.

Nickel and cobalt base alloys, for example, benefit through vacuum melting because there is a minimum loss of hardening elements due to oxidation, report Carboloy engineers.

PATTERN DESIGNS ROLLED INTO COLD ROLLED STRIP STEEL

A PATTERN-DESIGNED strip steel is now being produced at Pittsburgh Steel Company's Thomas Strip Division, Warren, Ohio.

The new product offers patterns rolled into cold rolled strip steel in almost any design that can be drawn on a piece of paper.

This strip can be supplied in plain uncoated steel or electrolytically coated with copper, brass, nickel, chrome, zinc or lead alloy in natural, planished or buffed finishes. It can be hot dip coated with lead alloy or tin, and lacquer coated either clear or colored.

Product applications

Developed primarily for decorative applications, it is reportedly finding acceptance in the manufacture of electrical appliances, housewares and builders' hardware. Other large scale applications are said to be under development.

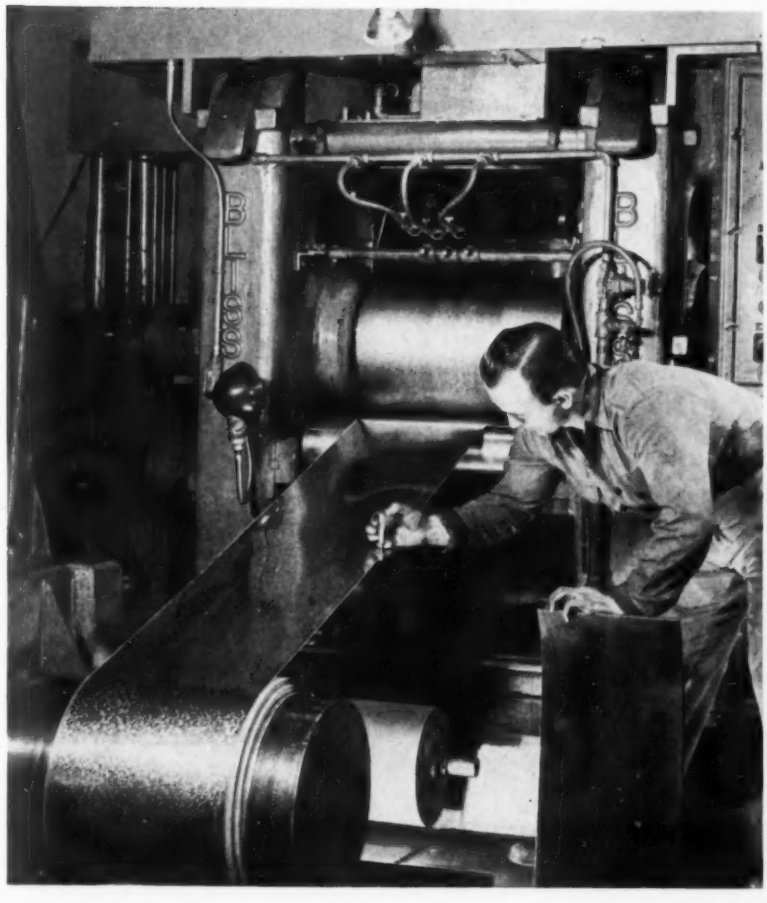
The pattern-designed strip is being produced at Thomas in widths up to 18 inches, and in a range of thicknesses from .010 to .125 inches, depending on the pattern, the type of coating and the finish required.

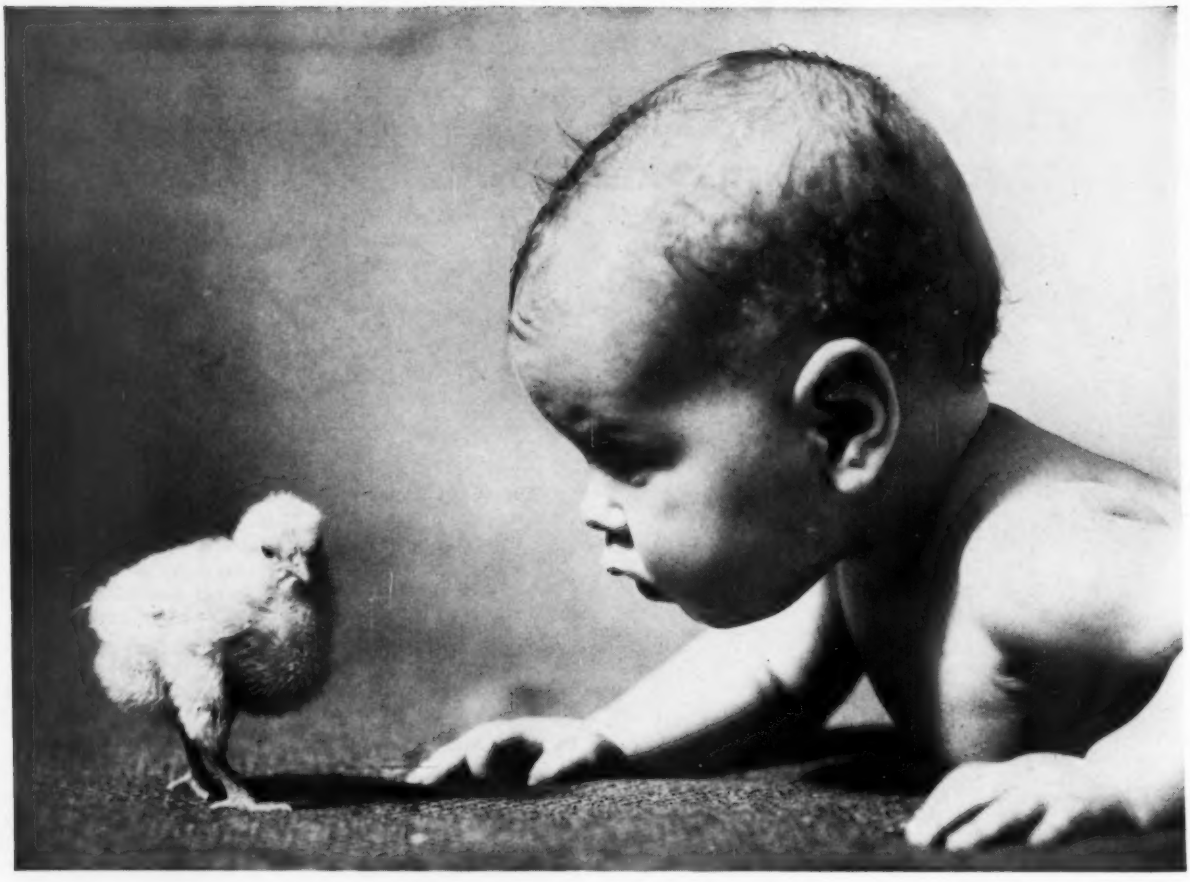
The company reports that the new product can reduce finishing costs, as well as saving on intermediate cleaning and buffing operations. It is further pointed out that the new strip steel, which can be easily fabricated, provides its own drawing lubricant.

The strip steel, which is available in coils or cut lengths, is said to be consistently uniform in gauge, width, fabricating qualities and physical properties.

Left: This display shows the broad range of application of the new "pattern-designed" steel strip.

Below: A variety of designs can be rolled into steel strip which is now available in plain uncoated finishes or electrolytically coated with copper, brass, nickel, chrome, zinc or lead alloys in natural, planished or buffed finishes. It can be hot dip coated with lead alloy or tin, or lacquer coated either clear or colored.





Curiosity

Nothing remains static, not even an industry, when curious minds . . . analytical minds . . . continually probe for new and better ways to achieve near-miracles.

This fact alone gives the Pemco Research and Development Laboratory a reason for being. What this Laboratory . . . and the people who serve you in it . . . have contributed to our industry is a matter of record.

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Manufacturers of "The World's Finest" Porcelain Enamel Frits, Coloring Oxides, Screening Pastes, Glaze Frits, Body and Glaze Stains, Underglaze and Overglaze Colors, Vitrifiable Glass Colors.

PERMAGLAS NAMES BURLESON MGR. OF WATER HEATER SALES

Appointment of Wayne Burleson as manager of water heater sales for the Permaglas Div., A. O. Smith Corp., Kankakee, Ill., has been announced by R. J. Shepherd, Permaglas general sales manager.

Burleson, who had been sales manager for the southwest district, fills the vacancy created when Shepherd became general sales manager.

KELVINATOR NAMES BARNES

Appointment of Edmund B. Barnes to the new position of general merchandising manager has been announced by Walter Jeffrey, vice president in charge of sales, Kelvinator Div., American Motors Corp., Detroit.

Barnes, formerly Pacific Coast regional manager, will be responsible for all Kelvinator sales planning and promotion, market research and advertising.

NEW NEWARK, N. J., ENAMEL JOBBING PLANT IN OPERATION

A group of five men, Paul Cecil, Harry Rohde, Carl Nowakowski, Sam Filreis and Norm Marcus, all technicians, either ceramic engineers or chemists, formed the company named Service Porcelain Enamel, Inc. to do general jobbing work in porcelain enamel.

Production was started the last week in February, 1955. Present work includes such items as signs, store fronts, fluorescent fixtures, table cases and range parts.

Paul Cecil, president, reports that business has been good, and that the outlook for the future is very bright as far as anticipated business volume is concerned.

ADMIRAL TO MAKE ROOM AIR CONDITIONERS

Admiral Corp., Chicago, has announced plans to manufacture its 1956 room air conditioners at the company's Midwest Mfg. Div. plant at Galesburg, Ill.

John B. Huarisa, executive vice president, said that by manufacturing its own air conditioners, the company will be able to make mixed carload shipments of all appliances to its distributors.

GIFFORD HEADS CROSLEY-BENDIX

Avco Mfg. Corp., Cincinnati, has announced the election of Chester G. Gifford as president of Crosley and Bendix home appliance divisions and vice president of Avco.

ALLIANCEWARE & AMERICAN METAL PRODUCTS CONSOLIDATE

In April, 1955, AllianceWare, Inc., Alliance, Ohio, and American Metal Products Co., Detroit, were consolidated.

AllianceWare operates under its present name as a wholly-owned subsidiary of American Metal Products, with no change in management.

3 TO WESTINGHOUSE PORTABLE APPLIANCE POSTS

The appointment of Robert E. Dobson as manager of marketing — special accounts — for Westinghouse portable appliances has been announced by John J. Anderson, portable appliance manager of the Westinghouse Electric Appliance Div., Mansfield, Ohio.

W. B. Massenburg, manager of the fan department, has been given the overall supervision of the vacuum cleaner department.

Manager of the vacuum cleaner department is M. J. Dunn, formerly marketing assistant in portable appliances.

SERVEL'S BRENNAN HEADS APPLIANCE MANUFACTURING

Brian E. Brennan has joined Servel, Inc., Evansville, Ind., as manager

of manufacturing in the home appliance division, announced John H. Wall, vice president and general manager of the division.

Formerly, Brennan was works manager for the Coolerator Co., Duluth, Minn., and prior to that he was plant manager and assistant director of manufacturing for Bendix Home Appliances, Clyde, Ohio.

MITCHELL APPOINTS SCIRE

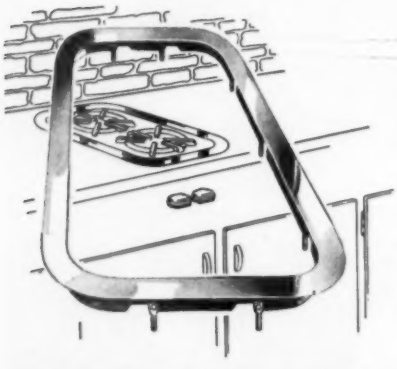
Appointment of Frank J. Scire as chief engineer of the air conditioning division of The Mitchell Mfg. Co., Chicago, has been announced by B. A. Mitchell, president.

For the Built-In Oven and the Drop-In Cook Top . . .

PYRAMID

FRAMES AND RIMS

Frames and rims are two items in the Pyramid line that will help you *step up sales* with *smarter appearance*. From lamp shades to kick plates, Pyramid specializes in sparkling stainless steel trim for modern appliances.



The latest trend in cooking appliances is the built-in oven and the drop-in cook top. If *you're* going after this market, you'll *want* to know about PYRAMID *Stainless Steel* FRAMES and RIMS ...Completely fabricated, *ready to attach to your unit*, they combine function with sparkling appearance designed to step up sales. Write for your copy of the Pyramid "Plan Book of Metal Mouldings"... *today!*

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Without obligation, please send copy of "Plan Book of Metal Mouldings." F-7

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Firm_____

Address_____

MISS EVANS HEADS FLORENCE STOVE HOME ECONOMICS DEPT.

The Florence Stove Co., Chicago, has announced the appointment of

Miss Carolyn Evans as director of their newly formed Department of Home Economics.

Miss Evans was formerly assistant equipment editor at *Woman's Home Companion*. Prior to that she was regional home economist for Crosley Div., Avco Mfg. Corp.

SEEGER NAMES MCDONALD ASSISTANT WORKS MANAGER

John S. McDonald has been named assistant works manager for Seeger

Refrigerator Co., according to John W. Kruger, vice president.

McDonald was formerly assistant to the president, Wayne Works, Inc., Richmond, Ind. Prior to that, he was superintendent of manufacturing process at Frigidaire.

PECK GAR WOOD V P

E. F. Fisher, president, Gar Wood Industries, Inc., Wayne, Mich., has announced the appointment of Milton G. Peck as vice president and director of sales and advertising.

ADMIRAL SALES DOWN

First quarter sales of Admiral Corp., Chicago, and subsidiary companies were $50,034,396, an 11% decrease from $55,977,563 in 1954, John B. Huarisa, executive vice president and treasurer, has announced.

U. S. AIR CONDITIONING NAMES HANSON & KELLEY

In two executive changes at the United States Air Conditioning Corp.,

L. P. HANSON

Minneapolis, Minn., L. P. Hanson has been named to the newly-created post of administrative vice president, and R. P. Kelley has joined the firm as general sales manager.

Hanson was previously vice president in charge of sales for usAIRco, and Kelley was vice president and manager of the appliance division of Motor Power Equipment Co., St. Paul, Minn.

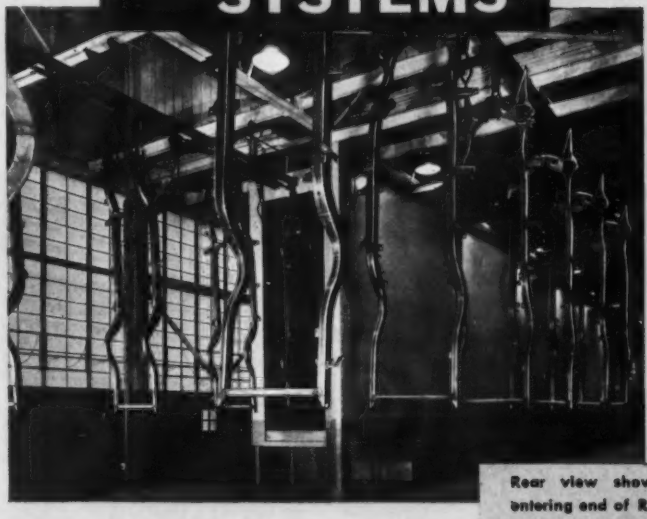
BORG-WARNER SALES FIGURES

Borg-Warner Corp. (Chicago) sales totaled $138,656,000 for the first three months of 1954, compared with sales of $97,807,000 in the same period of 1954, an increase of 41.8%, announced R. C. Ingersoll, president.

THE *Latest* INSTALLATION FOR FINISHING AUTO CHASSIS FRAMES

Uses The *Flow-Coat* Method With

ROSS SYSTEMS



Rear view showing entering end of ROSS Washing Machine — one unit of complete ROSS System for frame finishing.

DOUBLE THE OUTPUT

per hour over the older dip-paint method

For one of the world's leading builders of automobiles, this complete ROSS System sets a new standard for production far higher than that heretofore achieved by other makes of equipment. The ROSS System includes a 3-stage washer equipped with 1500 spray nozzles; a Flow-Coat machine providing facilities for painting 400 frames per hour—double the capacity of older methods; a Dry-Off Oven, a zoned Paint Bake Oven, and entirely new type gas-fired heating apparatus. Write for full information.

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ROSS ENGINEERING OF CANADA, LIMITED, MONTREAL, CANADA
CARRIER-ROSS ENGINEERING COMPANY, LIMITED, LONDON, ENGLAND

PERFECTION BUYS KNOX METAL PRODUCTS PLANT

As part of an expansion program, Perfection Industries, Inc., Cleveland, has announced the purchase of the Waynesboro, Ga., plant of the Knox Metal Products Co.

General manager of the Waynesboro plant will be John Gardner, formerly industrial relations director.

ENAMEL PRODUCTS REORGANIZES

The Enamel Products Co., Cleveland, has elected seven directors and appointed four new officers to the executive staff. New officers are: George C. Johnson, Sr., chairman; George C. Johnson, Jr., president — treasurer; R. Henry Norweb, Jr., vice president and secretary; and George S. Blome, vice president.

Directors are: John B. Dempsey, Squire, Saunders & Dempsey; John S. Fangboner, National City Bank; George J. Feiss, retired; George C. Johnson, Sr.; George C. Johnson, Jr.; Latham W. Murphey, Curtiss House; and R. Henry Norweb, Jr.

KELVINATOR NAMES RAMSEY DETROIT PURCHASING AGENT

Earl C. Ramsey, administration staff member, has been named purchasing agent for the Detroit plant of Kelvinator Div., American Motors Corp., announced W. F. Poupard, works manager.

Ramsey had been assigned to special manufacturing and procurement problems in his previous position.

Executive committee — *of the Glass and Ceramic section of the National Safety Council — were guests of Frigidaire Div., General Motors Corp. in Dayton, Ohio, recently. The semi-annual meeting was held to review the accident problems of the industry and to plan activities for the coming year. The meeting included a tour of the Frigidaire operations. Safety men, left to right: J. H. Gattrell, Blue Ridge Glass; J. L. Morris, Federal Glass; Clinton Ballinger, Owens-Illinois Glass; W. K. Browne, Owens-Corning Fiberglas; C. C. Ruddick, Pittsburgh Plate Glass; H. A. Jackson, Frigidaire; L. W. Dutton, National Safety Council; J. B. Fullen, Kopp Glass; T. R. Donoghue, Pittsburgh Plate Glass; R. W. Frank, Ferro; J. V. Skendall, Harbison-Walker; and K. W. Steinkraus, Owens-Illinois Glass.*

NORGE AUTOMATIC WASHER SALES UP 118%

Sales of Norge automatic washers to dealers for the week ending May 11 rose 118% above those of the corresponding 1954 period to set a new record.

R. C. Connell, vice president of sales, Norge Div., Borg-Warner Corp., Chicago, reports that sales were 10% higher than the best previous week.

SERVEL NAMES KENNISON V P

A. B. Kennison, product design consultant, has been elected vice president and coordinator of research and product development for Servel, Inc., Evansville, Ind., announced Louis Ruthenburg, board chairman, and Duncan C. Menzies, president.

Kennison was formerly a vice president and director of Ethicon, Inc., Brunswick, N. J., subsidiary of Johnson & Johnson.

STUDEBAKER APPOINTS BARNO AND BEUTLICH

Two top appointments in the Studebaker industrial relations department have been announced by Charles D. Scribner, Studebaker-Packard vice president in charge of industrial relations.

Peter S. Barno has been appointed director of industrial relations for the South Bend, Ind., plants. Harry D. Beutlich has been appointed labor relations manager, a new post.

GAS WATER HEATER SHIPMENTS UP

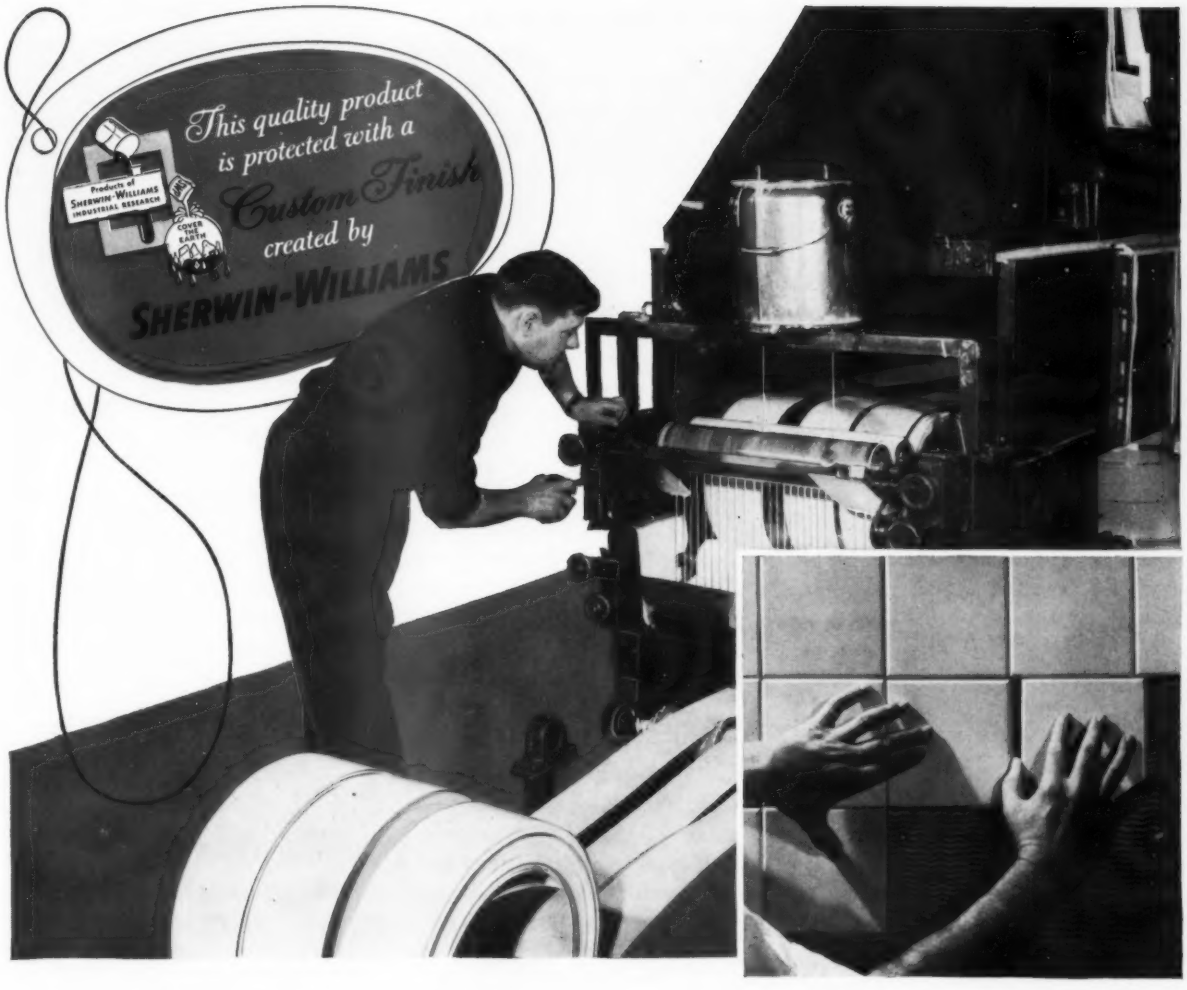
Automatic gas water heater shipments for the first four months of 1955 were 962,500 units or 32.2% over last year, according to the Gas Appliance Manufacturers Association.

Edward R. Martin, director of marketing and statistics, reported that April shipments totalled 260,100 units, 29.5% over last year.

NEMA MEMBERSHIP IS 571

Nine electrical manufacturers have joined the National Electrical Manufacturers Association, increasing membership to 571, announced A. F. Metz, president.

The new members are: Bar Bay Products, Inc., Brooklyn, N. Y.; Cavalier Corp., Chattanooga, Tenn.; Eureka X-Ray Tube Corp., Chicago; A. W. Fruh & Co., Chicago; Marion



How to paint a bathroom wall *12 FEET A MINUTE!*

What kind of finish can be put on aluminum wall tile that will withstand stamping and forming *after* painting . . . resist moisture, heat, chipping and marring . . . compare favorably with much heavier and costlier types of tile in beauty and durability?

Metal Tile Products Co., Hastings, Mich., put these problems up to Sherwin-Williams technicians. Special formulations were developed which are rolled on aluminum strip continuously at the rate of 12 feet a minute, then baked, stamped and formed into gleaming, lustrous tile squares in more than 20 colors. Result: a product which has experienced a phenomenal growth in sales . . . required repeated plant expansion . . . promises to require more.

Sherwin-Williams experience in the field of prefinishing of metals is one of many specialized types of product finishing help available to manufacturers. Investigate—check your Sherwin-Williams Industrial Representative or write The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio. (In Canada: 2875 Centre Street, Montreal.)

SHERWIN-WILLIAMS
Industrial Finishes

Electrical Instrument Co., Manchester N. H.; Profexray, Inc., Maywood, Ill.; St. Marys Carbon Co., St. Marys, Pa.; Standard X-Ray Co., Chicago; and Universal X-Ray Products, Inc., Chicago.

STUDEBAKER NAMES SMITH WORKS MANAGER

Clarence H. Smith has been appointed Studebaker works manager,

with responsibilities for manufacturing operations in all South Bend, Ind., and Los Angeles plants, Ray P. Powers, vice president of operations, Studebaker-Packard Corp., has announced.

WHIRLPOOL SALES UP

Elisha Gray, president, Whirlpool Corp., St. Joseph, Mich., announced that net sales and other income for 1955 during the three months ended March 31, totalled $51,134,388, as compared to $43,773,985 in 1954.

PEI UPS BRINKER AND ELIZABETH O'CONNOR

The promotion of two members of the Porcelain Enamel Institute's staff has been announced by John C. Oliver, secretary.

William N. Brinker has been promoted to market development manager, with responsibility for publicity, advertising, sales promotion and similar activities.

Elizabeth O'Connor has been named assistant secretary of the National Safe Transit Committee.

ELLIOTT IS CRANE PRESIDENT

Frank F. Elliott, senior vice president of sales for Crane Co., Chicago, since 1952, has been elected president and chief executive officer, succeeding John L. Holloway, resigned. Elliott joined the company in 1922 as a sales engineer at the Los Angeles branch.

GAS FURNACE SHIPMENTS SET NEW RECORDS

Edward R. Martin, director of marketing and statistics, Gas Appliance Manufacturers Association, has reported that 219,300 units were shipped to dealers and distributors during the first four months of 1955, an increase of 50.1% over the same period in 1954.

Shipments in April totalled 63,900 units, 46.6% over April, 1954, the former April high.

BROOKS HEADS REFRIGERATION INDUSTRY SAFETY COMMITTEE

Carl F. Brooks, code representative of the Frigidaire Div., General Motors Corp., has been elected chairman of the Refrigeration Industry Advisory Committee.

Other officers are vice chairman R. L. Williams, "Kinetic" Chemicals of Wilmington, and treasurer, Geo. S. Jones, Jr., managing director, Air-Conditioning and Refrigeration Institute, Washington, D.C.

The Committee is made up of representatives from the ARI, National Electrical Manufacturers Association and Compressed Gas Association, Inc.

UTILITY APPLIANCE BUYS PLANT IN MEXICO

It is reported that Utility Appliance Corp., Los Angeles, has acquired a plant in Mexico for assembling its evaporative coolers, refrigeration units, and combination heating and air conditioning units.

KELVINATOR SALES UP 47.2%

Walter Jeffrey, vice president in charge of sales, Kelvinator Div., American Motors Corp., Detroit, has announced that April billings to dealers for all Kelvinator appliances were 47.2% above April, 1954.

Laundry equipment showed the biggest gain among individual products for the seven months ended April 30.

VACUUM CLEANER SALES UP 10.5%

Factory sales of standard-size household vacuum cleaners in April amounted to 244,143 units, up 10.5% from 220,849 sold in April, 1954, according to the Vacuum Cleaner Manufacturers' Association.

A 30-year service pin — *is presented to R. S. Rheem, president, Rheem Mfg. Company, by W. S. Rheem II, general manager. D. L. Rheem (right), executive vice president, received the same award with J. P. Makenas (left), Chicago region manager, as host for the presentation.*

BUY STAMPINGS?
Stainless steel? Non-ferrous metals?
GET CUYAHOGA'S PRICES!
ONE OF THE 16 INTEGRATED COMPANIES
BARIUM STEEL CORPORATION
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PIONEERS IN ENGINEERING, MANUFACTURING & INSTALLING OF

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New Sales Feature

REQUIRES NO RETOOLING

COSTS ONLY PENNIES

MP-252, for primary circuit protection for 15-, 20-, and 30-amp. circuits. Acceptable on all Underwriter's Listed equipment.

Here's the new sales feature you've been looking for! Handsome, neat, compact and rugged, the MP-252 is engineered with single-hole mounting for high-speed application. Its easy, rapid installation can mean big savings in assembly costs, with a *plus* sales feature that your customers will be sure to go for.

Attractive pushbutton feature is trip-free . . . restores service within 10 seconds . . . yet will not maintain a circuit that has not been cleared.

MINI-BREAKER®

Made by one of the world's largest manufacturers of circuit breakers for aircraft, industrial and consumer use.

Write today for *new catalog* and detailed information

Mechanical Products, Inc.
Dept. B6, Jackson, Mich.
Please send new catalog and detailed information about Mini-Breakers for use with (describe equipment)

_____

_____

Name_____ Title_____

Company_____

Street_____

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2

FRANKLIN PURCHASES BEAM

It is reported that Beam Manufacturing Co., Webster City, Iowa, a division of Solar Steel Corp., has been sold to Franklin Manufacturing Co., Minneapolis, Minn.

ERIE ENAMELING UPS THREE

Robert E. Braggins has been appointed executive vice president and general manager of The Erie Enameling Co., Erie, Pa. Herbert R. Spencer, Jr. has been appointed secretary-treasurer, and Wesley L. Reynolds has been named plant manager.

NEW GAMA DIVISION MEMBER

Joseph Goder Incinerators, Chiago, has been named a member of the Gas Incinerator Div. of the Gas Appliance Manufacturers Association, according to division chairman, Harry Martens. This brings total membership in the division to 20.

TYPHOON APPOINTS STONE

S. Byron Stone has been appointed advertising and sales promotion director of Typhoon Air Conditioning Co., Inc., it was announced by Mark E. Mooney, vice president — sales.

HEINTZ MANUFACTURING TO APPLY NEW PROTECTIVE COATING

William Stoll, president, Allied Porcenell, Inc., sales representatives for Porcenell inorganic silicate coatings, has announced the appointment of Heintz Manufacturing Co., Philadelphia, as eastern manufacturing licensee for their new line of low-fire protective coatings and sealers.

Heintz operates eight divisions producing contract metal work for automotive, aircraft, railroad, appliance and other customers. They will assist in the sale of the coating through their porcelain enamel division. In a meeting of the two companies in Philadelphia recently, J. M. Ward, Heintz vice president, expressed his interest in producing Porcenell to meet a need for adequate low cost protection for thin gauge ferrous metals as used in industry.

A development of Vitreco, Inc., Waukegan, Ill., Porcenell is distributed and sold by Allied Porcenel, Inc., of Waukegan, Ill., and Phoenix, Arizona. Its development was sponsored jointly by The Youngstown Sheet and Tube Co., Youngstown, Ohio, and Poor & Company, Chicago.

To aid in the distribution, Allied Porcenell has appointed Walter A. Gorrell, Henry Atwater and D. S. Hoffman as its representatives in the eastern states. With their respective organizations, Hoffman will handle the railroad industry, Atwater the architectural aspect, and Gorrell the general industrial applications.

Representatives of Heintz and Allied Porcenell during meeting to discuss plans for production and sale of new silicate protective coating in the Philadelphia area. Standing, left to right: Messrs. Hoffman, Stark, Gunn and Kahler. Seated, clockwise: Messrs. Boehler, Chester, Gorrell, Stella, Olbur, Heins, Mooney, Stoll, Green, Bins, Schuster, Leutwyler Atwater, Hannan, McLaughlin and Irwin.

FURTHER FACTS ON FOSBOND: ACTIVATION AND ZINC PHOSPHATIZING — HOW CALORIC USES THEM

ACTIDIP® is a remarkable new activating compound for improving zinc phosphate coatings. Steel, zinc, or galvanized parts are treated with a very dilute suspension of ACTIDIP (alone or as part of a Pennsalt Activated Cleaner) just before the Fosbond phosphatizing bath. The result is an activated surface which promotes a highly uniform coating of very small, close-packed zinc phosphate crystals. Because of rapid deposition and controlled crystal size, superior coatings of only half the weight of usual phosphates are formed . . . sludge is controlled . . . and consumption of the phosphatizing solution is *reduced as much as 40%*.

By using ACTIDIP for activation before Fosbond zinc phosphatizing, you can get (1) vastly improved corrosion-resistance under your paint film, and (2) better adhesion and gloss-retention even with one-coat paint systems. Both benefits are due to the Actidip-created small, dense crystals.

Why Caloric Activates with Fosbond

• In the Fosbond Process used on Caloric Gas Dryers (see opposite page), Pennsalt Activated Cleaner F4, containing Actidip, is combined in one spray stage with silicated heavy-duty Cleaner F7. This combination of activated and silicated cleaners removes all traces of shop dirt, greases, drawing compounds, and other unwanted films; it also provides the small-crystal benefits of Actidip mentioned above.

• After a hot-water rinse, the cleaned metal parts enter the Fosbond 10 spray section of this typical Fosbond cycle. Zinc phosphatizing with Fosbond 10® produces a dense and durable coating that protects ferrous metals against corrosion even under the most humid conditions. *The extraordinary exposure of Caloric Dryers to moisture conditions prompted Caloric's selection of Fosbond 10 for this step in the cycle.*

• The Fosbond 10 treatment is followed by a cold-water rinse. Then the coating is sealed by a final rinse in Fosrinse CP.

Immediately after this typical Fosbond cycle, the metal is ready for painting.

Complete technical information about the many Fosbond phosphatizing cycles to meet all corrosion-resistance needs is readily available to you from Pennsalt. Write Customer Service Dept., Pennsylvania Salt Manufacturing Company, Three Penn Center Plaza, Philadelphia 2, Pa.

How Fosbond helps make Caloric Dryer a beautiful buy

The new Caloric Gas Clothes Dryer has to have an unusually durable finish both inside and out—one that will stay like-new for years, in spite of extreme and regular exposure to moisture and heat.

To help Caloric meet these high requirements, Pennsalt specialists made a comprehensive plant survey. Working closely with Caloric production men, they devised a Fosbond cycle for use on dryer parts prior to final finishing with Glidden's Nu-Pon. Fosbond 10, a zinc phosphate solution for spray application, was selected as the phosphatizing agent.

The Fosbond® Process provides lifetime corrosion resistance and creates an ideal surface for an organic finish —making it easier to apply, and promoting a smoother coating firmly "locked" to the base metal. In addition to the necessary materials, Pennsalt offers *continuing* technical assistance to keep the Process smooth-running, trouble-free. And behind Fosbond stands Pennsalt—a major chemical producer with long experience in the metal processing field.

If your plant and product would benefit from a *better* phosphatizing process and the merchandising value of the Fosbond-Good Housekeeping emblem, you ought to know more about Fosbond. Let us make a survey of your finishing operation (takes but a few hours . . . no obligation). Write: Customer Service Dept., Pennsylvania Salt Manufacturing Co., Three Penn Center Plaza, Philadelphia 2, Pa.

FOSBOND

Pennsalt Chemicals

Pennsylvania Salt Manufacturing Co.

FERRO

1920 1955

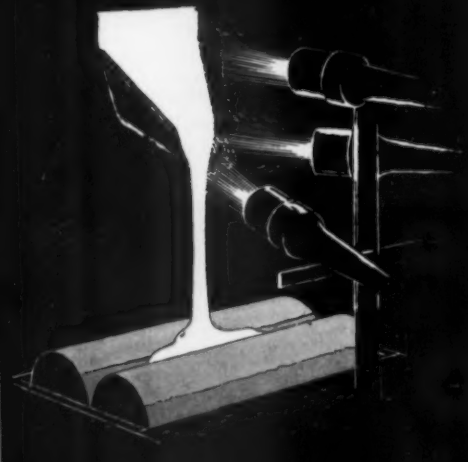
A business grown big through SERVICE

1948

Ferro perfects first electric continuous smelter for production of Porcelain enamel frits.

1955

Ferro's subsequent development of Continuous "flake-frit" smelters revolutionizes the industry, accounts for two-thirds of current production.



FERRO CORPORATION

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IN CANADA FERRO ENAMELS, LTD., OAKVILLE, ONT.

Institute of Appliance Manufacturers hold meeting

(Continued from Page 56)

vide suitable oven vents; (5) Should be a simple, standard method of making electrical connections (cord or plug) without having two or three tradesmen on the job waiting for their turn; (6) Standard dimensions are needed.

G. E. Hardin, Cincinnati Builders Supply

Until the last three or four years, the builder could build a kitchen around a built-in sink. Today, "plans" assume a new importance for, in many cases, the plans of dealers must be used.

Among women interviewed at home shows, 75 per cent show interest and desire to have built-in ranges.

The dealer lacks training in kitchen design. He must get this from the distributor and, in turn, from the manufacturer. There is not enough training by manufacturers in regard to installation. The dealer must be prepared to *sell* the entire job and *install* the job.

It is not possible to standardize 100 per cent but there should be an attempt to get "within a range." One designer has developed over 100 different cabinets for built-in ovens.

The quality and features in console ranges are excellent. These should be developed into built-ins.

William H. Weist, designer and structural engineer, Place and Company, Inc.

The builder can do the range dealer much good. Fifty installations in a building project can multiply to a demand for many.

The builder of 50 to 100 houses per year must pay for separate oven, range top, surface cabinet, oven cabinet (sometimes additional cabinet space), plus electrical installation and other building costs, adding a minimum of $465.00 to the cost of a kitchen.

The built-ins are selling in $25,000 to $35,000 houses and prices must be lowered to get these units into $10,000, $11,000 and $12,000 homes.

The suggestion is for a unit *complete* with cabinet and top (interchangeable top) for low cost housing.

It is indicated that closer ties between range manufacturers and cabinet people are necessary so that good "fit" is readily available.

Service is a must. A dealer won't handle it and there are many delays through the manufacturer. The builder will buy merchandise on which there is *service* and a *guarantee.* (F.H.A. is pushing for a one year guarantee on the *complete* house.)

Local advertising of less known products will be necessary to offset the best known brand names for local sales.

Work should be done with F.H.A. in Washington to get a program of standardization of *values* on built-ins.

R. L. Leusch, assistant sales manager, The East Ohio Gas Company

This gas company employs 60 promotion people. Result: 145,000 gas appliances sold by 1500 plumbers and dealers and 1000 builders in the territory.

The company has a staff of men to work up promotions and spends $250,000 on cooperative advertising, a 20 to 40 per cent allowance on advertising in all media.

East Ohio feels that the built-in gas range may be the salvation of the gas range industry.

East Ohio will spend $75,000 this year on newspapers, television and open houses to sell gas built-ins.

Problems include the fact that there is not very good coverage by manufacturers in the territory (only two have proper distribution). The installation situation is not desirable with a $50 charge in Cleveland for the plumber to install the connections for oven and surface unit. (East Ohio Gas runs a cooperative program but is a non-merchandising utility.)

Harry Knodel, The Harry Knodel Distributing Co.

A greater percentage of appliances

sold in Cincinnati are through furniture stores, department stores, hardware stores and some appliance stores (appliance stores diminishing both in number and total business).

It means $600 to $700 in Cincinnati for a housewife to install a built-in range. Not too many housewives are going to settle for the big difference.

F.H.A. is giving approval on houses of $18,000 and up but built-ins are not going into cheaper homes.

Knodel warns that manufacturers should not over produce and ruin the price market. Less than 1,000 built-ins were sold in 1954, with 95 per cent going to new homes. There were 25,000 ranges (both gas and electric) sold. "We will sell some," says Knodel, "but we won't see the time when 70, 80 or 90 per cent of the ranges will be built-in." (Wringer-type washers still out-sell automatics in Cincinnati as of 1954 due to price differential.)

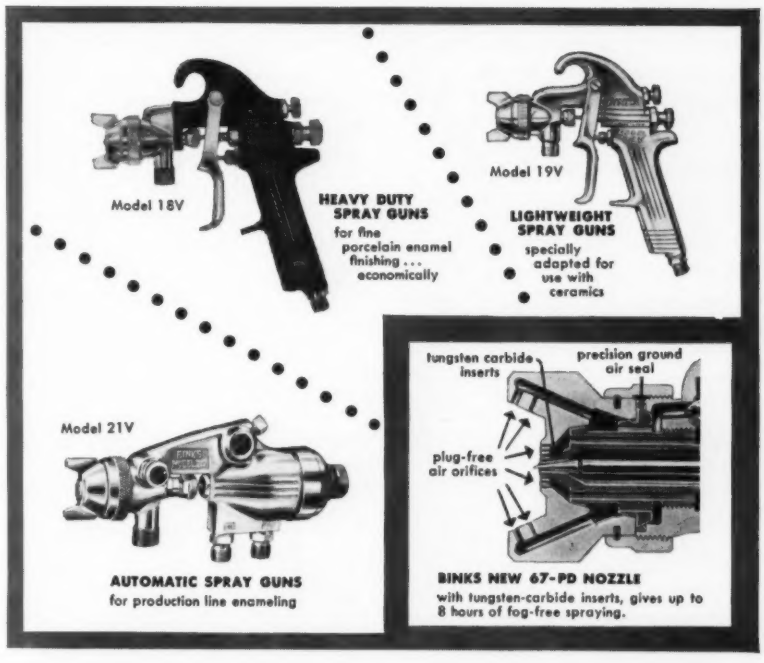
Standardization

In a discussion on built-in appliances, McMahon suggested that an attempt must be made to get national acceptance by F.H.A. to simplify the problem. He also feels that the greatest problem is standardization and this should be done on an industry basis *before* going to F.H.A. for national approval. "Manufacturers don't even know," he stated, "the standard cabinets their units will fit." Standardization between cabinets and built-ins is a must.

Bert Nagy, range engineer for Gray & Dudley, took exception to the request for standardization. He referred to it as comparable to building a car to fit the garage. He feels that there should be no attempt to force a manufacturer to standardize dies, sizes, etc. He feels that there is no problem if builders, utilities and manufacturers cooperate.

Gray and Dudley has handled the "color" problem by designing snap-on panels that can be changed in ten minutes.

Weist feels that standardization is not so important on custom houses but definitely is important on mass housing. He stated that the entire history of the building business is


Model 18V
HEAVY DUTY SPRAY GUNS
for fine porcelain enamel finishing ... economically
Model 19V
LIGHTWEIGHT SPRAY GUNS
specially adapted for use with ceramics
Model 21V
AUTOMATIC SPRAY GUNS
for production line enameling
tungsten carbide inserts
precision ground air seal
plug-free air orifices
BINKS NEW 67-PD NOZZLE
with tungsten-carbide inserts, gives up to 8 hours of fog-free spraying.

If you spray porcelain enamels, these guns will save you money

If you are looking for a spray gun that applies porcelain enamels and other ceramic finishes a little smoother...a little faster...and with less wear and maintenance...we invite you to try the Binks Model 18V equipped with the new 67-PD nozzle.

The Model 18V is a heavy duty gun built to stand up under day-in day-out use. Its comfortable pistol grip and balance reduce fatigue. Its large internal air passages reduce pressure-drop to a new low. Its precision manufacture makes it completely air-tight.

The 67-PD nozzle, with its unique arrangement of air orifices, operates for a full 8-hour shift without costly and annoying time-out for cleaning. It delivers more material with less air pressure (30 lbs.)...one pass of the gun gives you the desired film thickness. The precision fluid nozzle and needle valve are protected from wear by tough tungsten carbide inserts and tips, which increase the life of the gun 8 to 10 times.

But the Model 18V is only one gun in Binks complete line. There are guns for use in automatic spray coating machines, lightweight guns for manual operation...flow guns for cupping...extension guns for reaching distant hard-to-reach parts...guns for every use and purse.

FOR FURTHER INFORMATION about why many ceramic finishers are switching to Binks spray guns, see your local Binks Distributor...or write direct to the address below:

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built on standardization. With built-in appliances, manufacturers are in the "building" business and not the appliance business.

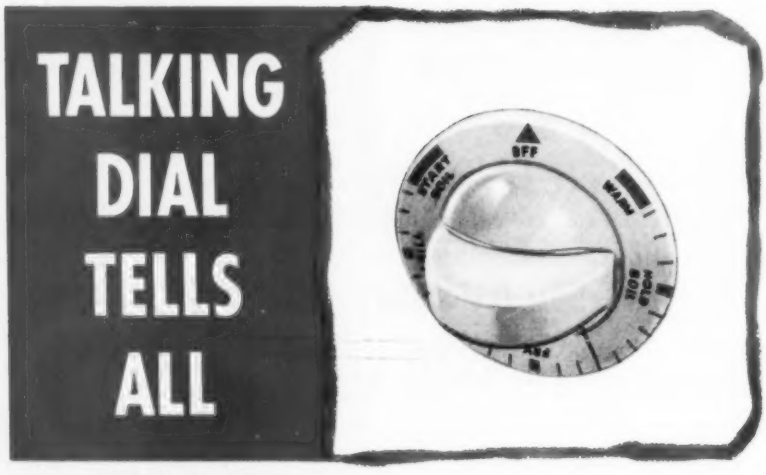
Defense supply and logistics

The Honorable T. P. Pike, Assistant Secretary of Defense (Supply and Logistics), presented a detailed explanation of the work that is being done to simplify the supply problem as related to over-all costs and to the interests of producing manufacturers. In his statement he said, "Actually, national defense involves two basic elements: (1) To provide a defense establishment of such magnitude as to discourage aggression and (2) to achieve this strength without undermining our traditional social and economic patterns of living."

Cataloging and standardization have rated high on the progam as outlined by Pike. As an example, in referring to procurement and production, he said, "As in the field of standardization and cataloging, we are improving our production and procurement operations. The Armed Services Procurement Regulation, which is the 'Bible of Procurement,' is designated as the prime vehicle for Department of Defense policy and procedures. In order to assure that procurement and production policies represent the best thinking of both government and industry, we have set up an industry advisory group to assist my staff and to funnel into the Department the views of industry in connection with various policy questions under study.

"With respect to production, in 1954 we established a new uniform Department of Defense scheduling system whereby schedules for some 500 items of 'hard goods' are submitted twice yearly and acceptance reports are submitted monthly. In so doing, we know at all times what items are under contract by individual contractors, and what is produced each month. If there is a slippage, we can detect the cause of it and undertake remedial action.

"Last year also, we saw the first inventory of machine tools. This was the first time an effort had been made to inventory all of the machine tools owned by the Department of Defense. It was generally believed that there would be some 500,000 items with unit acquisition cost of $500 and over, and a total acquisition cost of some $6 billion. Our inventory will soon tell us exactly what we have. We will have also completed specifications and specific information about their physical condition and location."


TALKING DIAL TELLS ALL
OFF
WARM
START COOK
HOLD BOIL
For "Jet Action" Cooking under Complete Control
Vertical jet taking off. Releases 5000 watts in a flash!
Horizontal jet in flight. Levels and holds at selected cooking speeds.
The Proctor Infinite Control Flasher Switch is the master of electric cooking at its fastest, automatic best. At last, it tells the homemaker where to set the dials in terms she can understand—to "fry", "boil", "grill", "hold boil", etc. In fact it allows her to set the dial to any position over the entire cooking range—not merely to 5 or 7 heat positions. No more dial-twitching or guessing to find the right heat and hold it.
And talk about jet speed! The surface element swooshes at 5000 watts to heat selected, then automatically levels off to cooking speed wanted. Melts butter in 15 seconds. Sizzles bacon in 30 seconds. Slow-fries eggs in 2 min. 18 seconds.
Proctor Infinite Control Flasher Switch works on 236/118V-1250W. The Infinite Control Switch (without flasher) available for 236V-1250W, 1450W, 1500W, 2050W, 2100W and 2600W. For further details WRITE OR TELEPHONE FOR 504 BROCHURE!
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Infinite Control Flasher Switch
PROCTOR
THE APPLIANCE NAME YOU CAN TRUST

TWO FRIGIDAIRE MEN DIE

It is with regret that we report the deaths of H. W. Alexander, head of the Materials and Processing Lab. and George F. Fischer, manager of plant No. 2, Frigidaire, Division of General Motors Corporation. Mr. Alexander died of a heart attack and Mr. Fischer died as a result of injuries received in an auto accident.

MERGER ANNOUNCEMENTS

Automatic Washer Co., Newton, Iowa, has announced projected merger with Washer-Dryer Corp., Skokie, Ill.

Perfection Industries, Inc., Cleveland, is planning to merge with Hupp Corporation.

Preway, Inc., Wisconsin Rapids, Wis., has purchased the Federal Products Div. of Federal Malleable Co., Milwaukee.

Appliance technical conference

→ *from Page 43*

Range center has four burners and controls set in the counter top — out of the reach of small children.

Oven center has thoroughly insulated built-in unit adjustable to a comfortable working height.

Installation and service considerations in built-in appliances

E. H. McNiece, of Detroit Edison Co., emphasized the need for standardization of connections, such as terminal blocks and switches. These are of equal importance to both the circuit wiring and servicing of built-in appliances, he said.

He mentioned that currently two of the most time-consuming operations in conjunction with some built-in units are the splicing and taping of several lead wires in a junction box to make connections, and the opening and remaking of these splices during servicing operations.

He then presented the following fundamentals necessary for the success of built-in appliances:

1. The customer must be taught the function and proper care of the units.

2. Need simplified well-defined instructions for the servicemen.

3. Servicing should be a one-man operation, and should be designed to safeguard human hands and back muscles.

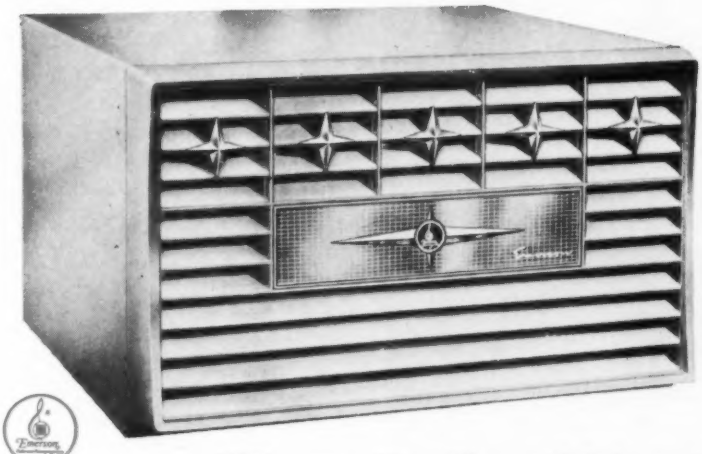
4. Without sacrificing appearance, built-in appliances should be designed so that most service operations can be performed from the front without removing the unit from its compartment.

5. Built-in appliances need a long life with minimum of service — as they become a permanent part of the building.

"It should be kept in mind," stated McNiece, "that it is the customer, and no one else, who decides whether a trend will grow — whether it will be big or little. The customer is the boss, and we must meet the customer's demands. In fact, the way good trends often disappear is by failure to serve the customer — this truly applies to servicing built-in appliances."

Effect of the built-in trend on design and installation

John H. Robinson, Jr., of General Electric Co., traced the history of home development from the "open house plan" of frontier log cabin



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With over 15 million satisfied owners

"EMERSON" stands high among the leading

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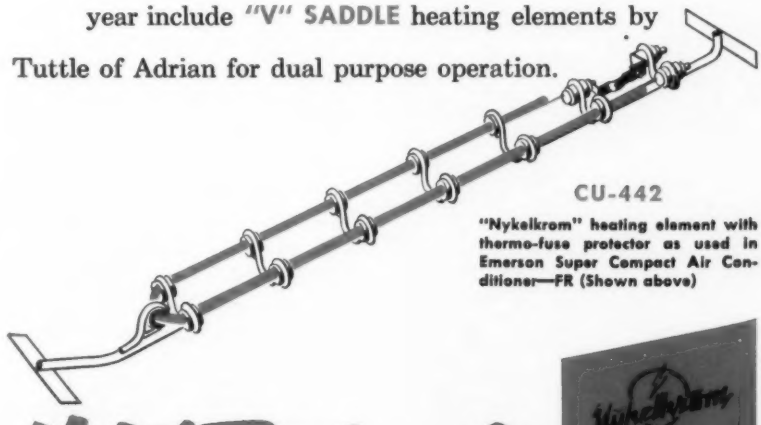
throughout the nation . . . .

The new "EMERSON AIR CONDITIONERS" this

year include "V" SADDLE heating elements by

Tuttle of Adrian for dual purpose operation.



CU-442

"Nykelkrom" heating element with thermo-fuse protector as used in Emerson Super Compact Air Conditioner—FR (Shown above)

H. W. Tuttle & Co.

ADRIAN, MICHIGAN

Nykelkrom FOR QUALITY

Manufactured and distributed in Canada by CRONAME (Canada) Ltd. Waterloo, Quebec

FERRO

1920 1955

A business grown big through SERVICE

1949

Ferro builds first Center-Wall Muffle, adding 40% to radiation area inside "U-type" furnaces and increasing load-capacity.

1955

Over 80% of all U-type furnaces now equipped with Ferro's Center-Wall Muffle.

FERRO CORPORATION

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IN CANADA: FERRO ENAMELS, LTD. OAKVILLE, ONT.

days — with cooking done in the fireplace — through the transition era when cooking and other kitchen functions moved into a separate room — and back again to today's "open plan" living.

"With the advent of refrigerators and ranges, both electrical and gas, a certain amount of prestige went with the acquisition of these new work savers, and hence, their exterior design tended to be lavish in order to be attention getters. It almost seems as if manufacturers tried to outdo each other by adding bigger and flashier handles and trim. This trend . . . is perhaps continuing in free-standing appliances. Another trend paralleling this lavishness of trim was the use of the so-called sanitary white finish."

"White coffins" in the kitchen

Continuing, Robinson said, "Everything was going fine until the bright boy with the "open house plan" revival took a look from the living room into our so-called modern kitchen and saw white coffins standing on end, called refrigerators, and cubes with all manner of front shapes and colored trim, called ranges, and all types of white cabinetry with busy little handles all over their front — and it was truly a nightmare from an interior decorator's or architect's viewpoint, for these things didn't blend into 'open plan' living."

Robinson suggested that the desire to hide or blend the appliance services was perhaps the reason for the built-in approach being taken with range surface units and the wall mounted oven which now lose their ability to be distinguished as a stove or a range. Since the refrigerator need only be accessible from the front, it too is disappearing as a box standing on the floor, and now is moving onto or into the walls.

Electrical, plumbing code considerations

Manufacturers contemplating entering the built-in game were urged by Robinson to become acquainted with many more codes than just the National Electrical Code. For those products involving plumbing, "you have a field day coming for there is no true National Plumbing Code even on a minimum standard that has any wide acceptance."

A simple thing like geographical locations becomes increasingly important in built-in appliance design, since many code requirements with respect to plumbing are caused by problems arising from freezing temperatures in the northern states, and in the area of electricity one will find requirements along the Gulf Coast for building wire to be quite different than those in Arizona.

Aluminum in appliances

Paul E. Brandt, director of application engineering, Reynolds Metals Co., discussed the "appearance" property of aluminum as it pertains to appliances.

He mentioned textural effects through embossing which renders a pleasing relief and reduces evidences of scratches and imperfections which may occur during fabricating operations or the useful life of the products. Satin finishes were referred to as lending a luxuriant styling effect. Vitreous enamel on aluminum has the advantage of better flexibility than enamel on steel, although it has the disadvantage that more production control is required, he said.

A most important recent development cited by Brandt is the tubed sheet for refrigerator and evaporator plates which has the following advantages over sheet and tube combinations: freedom of circuiting design, increased thermal efficiency, lower cost, elimination of "frost pinch", and simplified circuiting changes.

Surface emissivity as a factor in appliance design

A. S. Smith, of Westinghouse Electric Corp., suggested that appliance designers give more consideration to "surface emissivity which provides a fertile field from which many design variations can be attained. Proper attention to emissivity in the development of most appliance designs can result in increased efficiency, better thermal distribution, and improved performance."

"ALGER" AWARD TO SMITH OF PERFECTION

Donald S. Smith (left), president of Perfection Industries, Inc. (formerly Perfection Stove Co.), of Cleveland, Ohio, is shown as he received an *Horatio Alger Award* from Dr. Norman Vincent Peale in ceremonies at the Waldorf Astoria Hotel in New York. Mr. Smith was one of ten American business and industrial leaders to receive the 1955 award, given annually to those who have achieved outstanding success by individual initiative.

Unequaled in appearance, wear resistance and performance, Vitro chalkboard colors give a superior writing surface that lasts longer without glossing. They can be economically fired at low temperatures without metal warpage . . . provide greater coverage . . . and assure easier gloss control.

Available in blacks, yellows, whites, greens—also in pastel shades to take water soluble wax crayons.

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YOUR BEST SOURCE FOR
V-BELT PULLEYS and CASTERS!

If there is a V-Belt Pulley in your automatic washer, air conditioner, refrigerator, dryer or other product, you can probably cut costs with Nagel-Chase pulleys.

These precision-built, true-running, pressed steel, welded pulleys are built in a wide range of sizes from 2-5/16" O.D. to 14" O.D., including step down pulleys. Where quantities warrant, special sizes can be produced.

Casters, too, designed for trouble-free operation on all kinds of mobile appliances, have been a specialty at Nagel Chase for over a quarter century.

In fact, this company may help to effect substantial savings on any component part of pressed steel construction.

For pulleys, casters and pressed steel parts, it will pay you to consult Nagel Chase.

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2811 N. Ashland Avenue, Chicago 13, Ill.
SPECIALISTS IN CASTERS AND PULLEYS FOR NEARLY A QUARTER CENTURY!

Home appliances for tomorrow

(Continued from Page 47)

always, is an honest answer to her needs for kitchen equipment to fit into her new pattern of living. That desire is the same as it has always been; it's the pattern of living that has changed.

Superficial re-styling of existing equipment or the addition of a new "gimmick" feature is not enough.

Color, while satisfying part of her desire for beauty and "fashion" is only one entry in the homemaker's "I Would Like to Have" book.

Built-in appliances are likewise only a part of the picture. They offer just as many problems for the homemaker (who is trying to figure how to get them into existing or new kitchen plans) as they do for the manufacturer trying to produce them.

After 22 years of experience in dealing with problems of industrial design and new product development, *I am convinced that the search for successful product development does not start with a study of manufacturing processes, merchandising techniques, cost accounting or analysis of competitive merchandise.*

Study the buyer to know the market

For successful product development, industrial management must go back to some extremely basic and fundamental questions:

Who is going to buy and/or use the product?

Where is the product going to be used?

How is the product going to be used?

What must the product do?

What elements beyond the "use" factor must be considered?

In the Chapman office we have regularly applied this type of analysis as the basis of comprehensive design study for almost every category of appliance and equipment used in the kitchen, school furniture, industrial motors, architectural, product, packaging and display design.

Without such a basis of grass-roots study of a problem, design becomes little more than artistic whitewash over existing forms.

We can point to case after case of successful design ventures, both from this office and the offices of our colleagues. Success was made possible where these principal questions were answered first and answered objectively, and the resultant design programs were based on conclusions drawn from answers.

We can also point to case histories where design effort was watered down and seriously hampered by management's emphasis on styling alone, without consideration of a firm foundation of research for the styling effort.

Coppertones in porcelain enamel

(Continued from Page 39)

with during normal usage. The 'Copper-Tan' blend was arrived at after two years of research and study by our own staff as well as outside consultants and suppliers."

To produce the finish, a light color base of titania cover coat enamel is first applied over fired ground coat enamel. Then, while this is still wet, shading is oversprayed in the desired pattern. The shading is also made out of a clear acid-resistant cover coat enamel but is a darker color than the base enamel. A lacquer gun with a fine tip and needle may be used effectively for shading.

In offering a brief description of the process, Dickas said:

"This finish is prepared using an AR clear frit and specially compounded coloring oxides with a mill batch ground to a fineness of approximately 1% on a 200-mesh screen. In order to prepare the 'Copper-Tan' finish, we require two enamels: a base coat and a high-light color. The ground coated panels are sprayed in the lighter of the two enamels and then high-lighted with the darker shade. We use low pressure spraying in the application of this finish.

"The ground coat thickness is approximately .003, and the cover coat thickness first coat is approximately .004, and the highlight portion of the finish is approximately .002. We have an average thickness of around .009 on the entire panel. The 'Copper-Tan' finish is fired one time only at approximately 1540°F. for 3½ minutes.

"We have designated two sprayers who are entirely responsible for the correct blending of enamels during application. This is extremely important since the correct pattern on each panel is absolutely essential so that the various components will match and come up to our quality standards."

How clean is your paint room air supply?

(Continued from Page 29)

with the filters functioning properly, only clean air passed through the booth. The system was also supplying clean air to the drying room.

"When things looked right, we decided to put it to the acid test and work on one of the orders for red equipment," David said. "When that came out all right, we knew we had finally reached the solution to the paint line problem."

Red vehicles have a tendency to reveal any bit of dust or discoloration or uneveness in the metal, but they are rolling out of the paint areas now perfect in every respect.

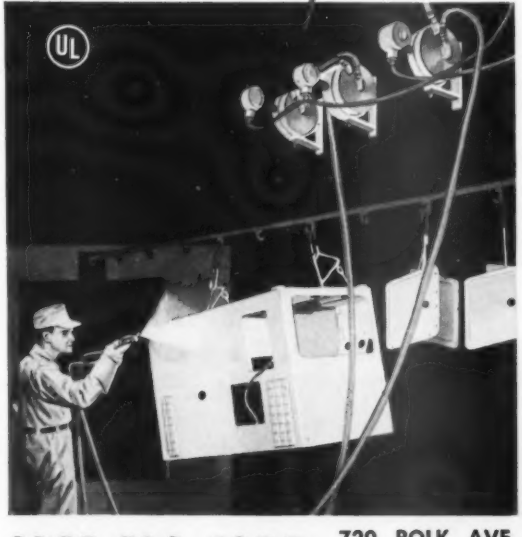
Typical of the benefits from today's operations is a recently delivered piece of equipment for the city of Philadelphia. The specifications for this large fire engine called for seven coats of a special lacquer, each to be hand-rubbed. The finished product, which was painted and dried with no difficulty, is a job of which the company is particularly proud.

The John Bean Company is meeting delivery dates now, and the former cost and effort of re-working vehicles have been eliminated.

"look how we reduced our production costs with... SPEE-FLO"

8272

- Faster application
- Material savings by reduced overspray
- Better finish
- Reduced rejects



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SPEE-FLO
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Ask for an on-the-job demonstration

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Builders of practical industrial and automotive hot spray equipment.
Please send me information on your line of hot spray heaters best suited to our work. Type of products being finished_____
Application is conveyorized_____ turntable_____ mobile_____ other_____
Average volume of material per gun per hour_____
Type of material_____ Please have representative call_____
Name_____
Company_____
Address_____
City_____ State_____

NEWS ABOUT SUPPLIERS

W. B. ELLIS

B. R. YOUNG

J. R. WILLIAMS

R. A. MULLER

SIGNODE TOP SALES CHANGES

James R. Williams, manager-sales promotion, Signode Steel Strapping Co., Chicago, has been advanced to Chicago district sales manager covering territories in eight midwest states.

S. E. Heymann, market research manager, has been named advertising and sales promotion manager. C. Howard Carlson is assistant advertising and sales promotion manager.

KAISER ALUMINUM INSTALLS INGOT CASTING FACILITIES

Ingot casting facilities costing approximately $750,000 are being installed at Kaiser Aluminum & Chemical Corp's Mead, Wash., reduction plant, D. A. Rhoades, vice president and general manager, has announced. Construction is underway, with completion set for late this year.

ATLAS PLYWOOD ELECTS MULLER PRESIDENT

Robert A. Muller has been elected president of Atlas Plywood Corp., Boston. With Atlas since 1927, he has held the positions of chief engineer, general production manager, vice president and director.

In his capacity as chief engineer he holds many patents now vested in the company's name, covering its products, processes and equipment used, embodying the mechanical, electrical and chemical field. His responsibilities have included heading up research and development for the company.

STARECK TO HEAD RESEARCH FOR METAL & THERMIT

Dr. J. E. Stareck has been appointed director of research, Metal & Thermit Corp., H. E. Martin, president, has announced. Dr. Stareck will also continue to direct the research activities of United Chromium, Inc., a Metal & Thermit subsidiary.

DETREX APPOINTS YOUNG

R. A. Emmett, Jr., works manager, Detrex Corp., Detroit, has announced the appointment of Bruce A. Young as equipment specialist for the northeastern United States, covering 26 states east of the Mississippi.

SHELL CHEMICAL ANNOUNCES SALES STAFF CHANGES

Five management changes in the marketing department of Shell Chemical Corp., New York City, have been announced by G. W. Huldrum, Jr., general sales manager.

W. C. Lowrey was named manager of the Newark district; W. A. McCormick, district manager, St. Louis; R. W. Campbell, district manager, Los Angeles; G. E. Garland, to the sales manager's staff; D. P. Jones, district manager, New York.

PROMAT NAMES KAHLER & ELLIS

The appointments of Harold A. Kahler as assistant to the vice president and Walter B. Ellis as western district manager have been announced by Promat Div., Poor & Co., Waukegan, Ill. Ellis' offices will be in Gardena, Calif.

MERRILL HEADS SALES FOR BEHR-MANNING

Henry R. Merrill has been appointed general sales manager of the Behr-Manning Div., Norton Co.

Merrill, a director and assistant general sales manager for the past two years, succeeds the late John M. Cook.

Union Steel Products Co.—*of Albion, Michigan — has announced the purchase of land and buildings recently vacated by the Colson-Service Div. of Colson Corp., of Elyria, Ohio. The Albion plant was owned by Service Caster & Truck Corp. W. Clark Dean, Union Steel president and general manager, reports that this purchase will add 84,000 sq. ft. of manufacturing space to the 380,000 sq. ft. located in their main plant.*

VAN VALKENBURGH

R. W. CAMPBELL

W. H. WOODS

W. A. MC CORMICK

J. E. STARECK

H. D. MC LEESE

SORENG NAMES NEWCOMB MGR. OF AUTOMOTIVE SALES

Harley Newcomb has joined Soreng Products Corp., Schiller Park, Ill., as manager of automotive sales, announced G. R. Calkins, vice president, director of sales.

Newcomb was previously associated with the Ford Motor Co., Crosley Corp., Hudson Motor Car Co., and Kaiser-Frazer Corp.

FISHER TO HOWARD INDUSTRIES

Fremont Fisher has joined the executive staff of Howard Industries, Inc., Racine, Wis., as general sales manager. He was formerly associated with Howe Scale Co.,

MCLEESE METAL & THERMIT GENERAL SALES MANAGER

H. D. McLeese has been appointed general sales manager of Metal & Thermit Corp., H. E. Martin, president, has announced. McLeese, who had been vice president and general sales manager of United Chromium, Inc., a Metal & Thermit subsidiary, will direct the sales of all Metal & Thermit and United Chromium products.

FERRO COLOR DIVISION CHANGES

Ernest S. Felker, southern representative, Ferro Corp., (Cleveland) on glazes and color oxides for the clayware and plastics industries located in Dallas, Texas, has been promoted to the position of administrative assistant to the manager of the color division.

Jack W. Godbold will take over the southern territory with headquarters in Dallas.

VAN VALKENBURGH, V P, OF M. H. RHODES, DIES

Merritt Van Valkenburgh, vice president of M. H. Rhodes, Inc., died May 24 at Nyack Hospital in Nyack, N. Y.

He joined the company in 1935 as an industrial sales representative and consultant in engineering design and development. In 1937, he was appointed vice president and during World War II directed Rhodes' research and development functions for the armed forces.

In addition to industrial development activities, Van Valkenburgh was responsible for the designing of many timers and time switches for end use, either as portable timers or as component parts of major appliances.

IRC BUYS EMEC

Charles Weyl, president, International Resistance Co., Philadelphia, has announced that IRC, through one of its California subsidiaries, has purchased EMEC, Inc., Seattle, Wash.

EMEC manufactures magnetic clutches for electronic and electric applications.

PORTER, OF U. S. STEEL, DIES

Rudyard Porter, a metallurgical engineer for United States Steel Corp., Chicago, died at his home in Evanston, Ill., on May 29. He had been associated with the corporation for 35 years.

Mr. Porter was a member of the American Ceramic Society, Midwest Enamelers Club and the American Society for Metals.

FLETCHER TO COLUMBIAN BOARD

S. W. Fletcher, president, J. O. Ross Engineering Corp., New York City, has been elected a director of Columbian Carbon Co., New York.

TUTTLE & KIFT TO SET UP AUSTRALIAN COMPANY

Tuttle & Kift, Inc., Chicago subsidiary of Ferro Corp., Cleveland, has licensed the Australian firm of John Foster Investments Pty. Ltd. to set up a new company, Tuttle & Kift (Australia) Pty. Ltd., to manufacture electrical cooking units under the company's patents.

TITANIUM PIGMENT APPOINTMENTS

National Lead Co. has announced the appointment of W. H. Woods as general sales manager of its Titanium Pigment Corp., succeeding K. W. Ericson, retired. Earl W. Diener was

E. W. DIENER

W. C. LOWREY

S. E. HEYMANN

D. P. JONES

H. R. MERRILL

HARLEY NEWCOMB

appointed assistant general sales manager of the corporation.

SOUTHCO BUYS LION FASTENER

Southco Div., South Chester Corp., Lester, Pa., has announced the purchase of the working assets of Lion Fastener, Inc., Honeoye Falls, N. Y.

DEFORD NAMED PEMCO DIRECTOR

Benjamin F. Deford, Jr., secretary, Pemco Corp., Baltimore, Md., has been elected a member of the board of directors, according to Richard H. Turk, chairman.

STRUTHERS WELLS NAMES BURBANK DISTRICT REP.

Struthers Wells Corp., Titusville, Pa., has announced the appointment of Harlan W. Burbank as district representative for southern Ohio, western West Virginia and Kentucky. He will represent the machinery div. which manufactures tangent benders, folding machines, press brakes and special machinery.

PATTERSON FOUNDRY'S 90 YEAR

The Patterson Foundry & Machine Co., East Liverpool, Ohio, is now in its 90th year. Founded in 1865, Patterson originally (and up to 1915) specialized in equipment for the ceramic industries. Today, it is also a leading designer and builder of plants, and machinery for the chemical and process industry.

ACME ALUMINUM APPOINTMENTS

O. L. Earl, president, Acme Aluminum Foundry Co., Chicago, announces the recent election by the board of directors of W. H. Osborne as executive vice president. Osborne retains the positions of secretary and treasurer. He has been associated with Acme for 16 years and, prior to his new appointment, he was vice president, secretary and treasurer.

Acme directors also elected C. L. Sidinger as vice president in charge of manufacturing and engineering. Sidinger has served as works manager since 1946, following service as a lieutenant colonel in the armed forces. He is a graduate engineer, and prior to his service in the Army, he was associated with Mullins Mfg. Co., Salem, Ohio, first as tool and die designer, later as development engineer in the washing machine wringer division, then as service engineer in the general sales offices.

YOUNGSTOWN SHEET CHGO. MILL

The Youngstown Sheet and Tube Co., Youngstown, Ohio, will build a new seamless tube mill at its Indiana Harbor Works in the Chicago district, it has been announced by J. L. Mauthe, president.

The company just recently broke ground for a new-multi-million dollar tinplate mill at the Indiana Harbor Works.

DARCEY TO CARBORUNDUM MACHINE METHODS DEPT.

Arthur E. Darcy, abrasive belt machine specialist, has been appointed manager of the machine methods dept. of the Coated Abrasives Div., The Carborundum Co., Niagara Falls, N. Y., according to W. H. Wendel, company vice president.

FAIRMONT ALUMINUM APPTS.

Fairmont Aluminum Co., through sales manager L. M. Campbell, has announced the appointment of two additional representatives: C. O. Pursell, serving Michigan, and G. E. Sandberg Co., serving Minnesota and part of western Wisconsin.

T & K PRODUCES 10,000,000TH SURFACE HEATING UNIT

Tuttle & Kift, Inc., Chicago producer of surface cooking elements for the electric range industry and a subsidiary of Ferro Corp., recently celebrated the production of its 10,000,000th unit. To mark this milestone, several of the heating units were taken from the production line and gold-plated, and the first of these was given to Robert A. Weaver, Ferro board chairman. Others will be presented to T&K customers for promotional purposes and to serve as souvenirs of the occasion.

While Tuttle & Kift was established in 1938, it was not until almost 10 years later that they developed the Monotube surface unit for electric ranges. Between T&K's own production and that of its licensees, it is estimated that nearly four million ranges have been equipped with Monotube surface units in the past 8 years.

J. A. Sullivan, T&K president, presents gold plated 10,000,000th surface cooking unit to R. A. Weaver (right), Ferro board chairman.

July · 1955

safe transit

FROM ASSEMBLY LINE TO FINAL CUSTOMER

DESIGNED to go places

HEAVY-DUTY SHIPPING CONTAINERS FOR *Maytag*

MAYTAG'S container, built by INTERNATIONAL, offers many definite advantages:

- Large automatic gluer insures uniform high quality results and at the same time economizes on material.
- Time saving in packing . . . proved by actual time studies.
- Easier to uncrate. Saves 33⅓% on labor compared to older methods.
- Less claims for damages in transit . . . tare weight reduced.
- Approved by Consolidated and Uniform Freight Classifications Committee for rail shipments.
- Dust proof construction. Machines arrive factory fresh.
- Large surfaces give ample room for identification of contents and strong advertising story which ties in with national advertising.

Would you like to know how this versatile, sturdy container can be adapted to meet your specific needs? Write us for further information. INTERNATIONAL'S heavy-duty shipping containers are designed to go places. *And*—provide safe transit!

International Paper company
CONTAINER DIVISION
220 East 42nd Street, New York 17, N. Y.

safe transit

A monthly trade publication section devoted to improved packaging and shipping and materials handling practices in the home appliance and metal products manufacturing field.

Plant experience information for all executives and plant men interested in the problem of packaging and shipping improvement and loss prevention.

Complete information on the National Safe Transit pre-shipment testing program for packaged finished products, and detailed progress reports of divisions and sub-committees of the National Safe Transit Committee.

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FIBRE BOX ASSOCIATION HOLDS SPRING MEETING....**ST-14**

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Elmhurst, Illinois
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***Fibre Box Association members**—displayed 84 entries in the 1955 Fibre Box Exhibit held in conjunction with the Association's spring meeting held recently at the Edgewater Beach Hotel in Chicago. Each of the entries represented either a new design in a fibre container, a new use for fibreboard, or a conversion from another type of container. Shown at the exhibit was a container recently adopted by General Electric Co. for its 40-inch deluxe electric range (see photo). Since its adoption, the container is said to have effected a reduction in handling and transportation damages. For more details on the exhibit,* *turn to Page ST-14.*

EXPORT: Placing a Chicago Mill and Lumber container over a Voronado air conditioner on the O. A. Sutton assembly line.

DOMESTIC: An air conditioner in "offset" type wirebound crate on the dolly of the incline impact test machine.

CHICAGO MILL helps SUTTON *Deliver Safely*

The O. A. Sutton Corporation, manufacturers of air conditioning units and fans, is another one of the leading appliance manufacturers using Chicago Mill and Lumber Company containers to provide safe shipment for their finished product. Where the going is toughest (export) Chicago Mill provides safe delivery any place in the world with hinge-corner plywood. For domestic delivery of large units, wirebound is the answer.

In order to meet the requirements of the growing air conditioning industry, Chicago Mill had its engineers design the best possible container for the protection and shipment of room air conditioners (for domestic or export). The hinged corner plywood container that was developed offers these advantages:

Maximum protection	You can stack them 20 high
Low cost	for compact storage with a
Fast assembly	good factor of safety.

Contact your Chicago Mill representative for complete information

Wirebound
Nailed or Hinge Corner
Cleated Plywood
Cleated Craveneer
Cleated Corrugated
Watkins Type Containers
Shop and Tote Boxes
Woodsteel Nesting Boxes

★

FOR DOMESTIC OR EXPORT
FOR PEACE OR DEFENSE

A shipping container for every shipping purpose.

FOR SAFER TRANSIT BY • TRUCK • BOAT • TRAIN • PLANE

CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street — Chicago 3, Illinois

Plants at: Helena, Arkansas • Greenville, Mississippi • Rockmart, Georgia
Tallulah, Louisiana • South Fork, Colorado • Chicago, Illinois

Formerly, Sutton used a crate composed of six pieces which required the use of this special jig in crating operations.

Through NST tests, a 3-piece crate was developed, permitting crating operations to be performed on assembly line conveyor.

Sutton finds NST testing pays triple dividends

THE O. A. Sutton Corporation, Wichita, Kansas, a leading manufacturer of room air conditioners, has found that its participation in the National Safe Transit Program is paying triple dividends: (1) improved product design, (2) reduction in packaging costs and damage claims, and (3) added consumer satisfaction.

Dan Mull, chief engineer, reports that the use of National Safe Transit pre-shipment tests has enabled Sutton to improve design features of its Vornado air conditioners to enable them to better withstand shipping hazards.

Furthermore, said Mull, "We found that when we submitted our packaged air conditioners to vibration and impact tests that in some places we were overdoing the job *(of packing)*. The tests allowed us to develop a new package that was less expensive, and yet would withstand normal freight handling without product damage."

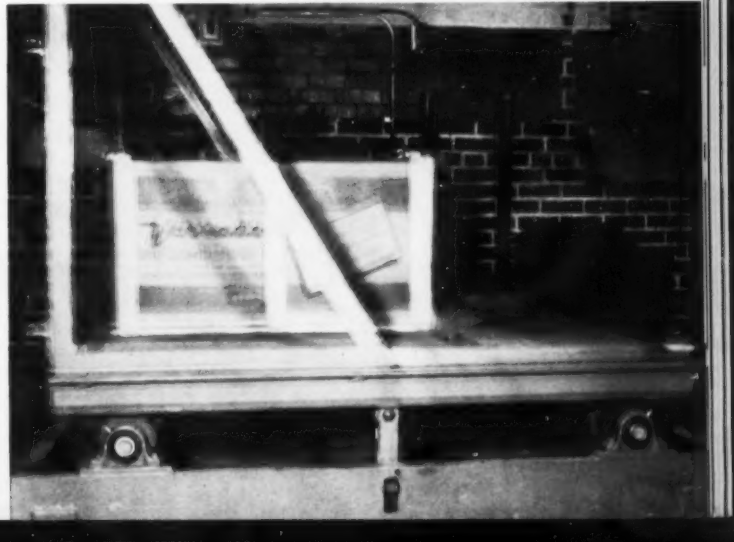
According to Mull, the NST tests also help assure distributors and dealers that when they uncrate Vornado air conditioners there will be no embarrassing or expensive hidden damage. Mull stated that, although the ultimate consumer rarely sees a shipping crate, delivery of the air conditioner into the home without hidden damage "enhances consumer satisfaction and confidence" in the product and its manufacturer.

NST tests conducted daily

In the plant's testing laboratory, vibration and impact testing machines are used to spot check packaged products daily as they roll off the production lines. "We're serious about shipping our air conditioners in the best package possible to develop," said Mull, adding that the cost of testing equipment and personnel to operate it can be greatly offset by the savings realized in preventing hidden freight damage.

Export crates are given the added protection of binding wire which is tensioned around the cleats at each corner.

Packaged air conditioner undergoing vibration test which simulates vibration conditions encountered in transit.



AIM* to reduce in-transit damages on appliances with Acme Steel Strapping Ideas

Acme Idea Man Ed Peterson continues to recommend new, better packaging and shipping methods.

ask your *Acme Idea Man to help solve your problems

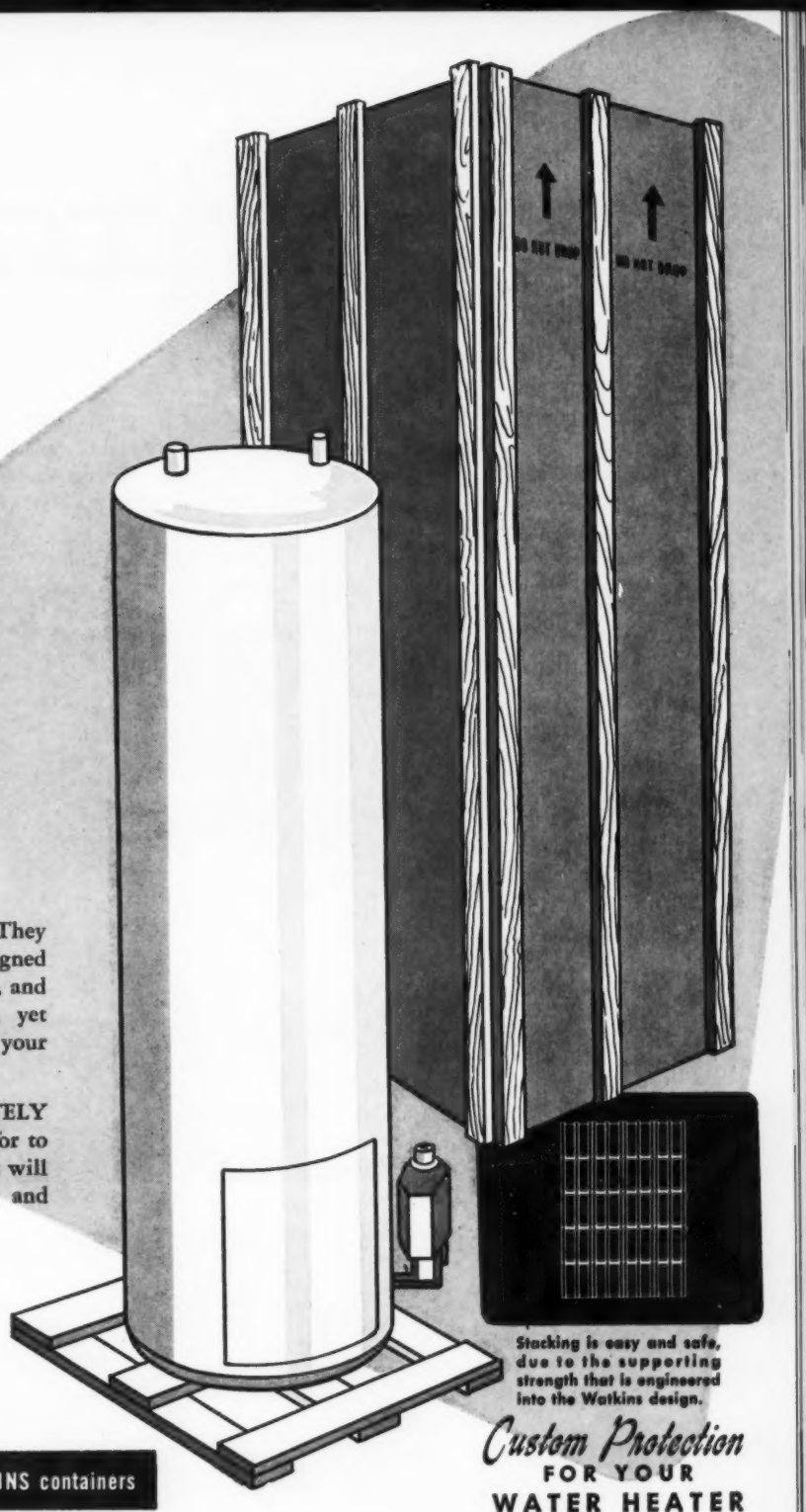
Since using Acme Steel's "anchor load" system of freight car bracing, in-transit damage has dropped to a new low for Deepfreeze Division, Motor Products Co., North Chicago, Illinois. Idea 448. The entire load is securely anchored to car walls with Acme Steel Unit-Load Band. Freezers stay in place . . . aren't marred or smashed by jolts. Result? Damage claims are greatly reduced. Unloading is speeded too. Just cut bands, unloading begins. So consignees as well as shipper save time and costs.

Your Acme Idea Man will gladly show you how to protect your shipments better and at lower cost. Call him today. Or write Acme Steel Products Division, Dept. RS-75, Acme Steel Company, 2840 Archer Avenue, Chicago 8, Illinois.

AIM *For Safe, Lower-Cost Shipping*

ACME STEEL

WATKINS has the container for your shipping problem



Stacking is easy and safe, due to the supporting strength that is engineered into the Watkins design.

Custom Protection FOR YOUR WATER HEATER

Watkins Containers will cut your shipping costs. They are delivered to your factory 75% assembled and designed for quick and easy completion, to save you labor, time, and expense. Scientific design gives maximum strength, yet keeps container weight at a minimum and reduces your shipping costs.

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Only Watkins Containers provide all of these many desirable and necessary features and at no greater cost than other types of containers. Ship your carefully manufactured products safely and economically—ship them the "Watkins Way."

these companies build WATKINS containers

Cozier Container Corp. ..... 446 East 131st Street, Cleveland Ohio
Crate-Rite Mfg. Co. ..... 4079 Halleck Street, Oakland 8, California
Dura-Crates, Inc. ..... 940 East Michigan Street, Indianapolis, Indiana
General Box Co. ..... 1825 Miner St., Des Plaines, Illinois and 16th and Maple Sts., Louisville, Kentucky
Homb & Martin Mfg. Co. ..... P. O. Box 108, Murfreesboro, Tennessee
Illinois Box & Crate Co. ..... 811 Center Street, Plainfield, Illinois
Kieckhefer Box & Lumber Co. ... 1711 West Canal Street, Milwaukee, 3 Wis.
Lane Container Corp. ..... 10212 Denton Road, Dallas, Texas
Lewisburg Container Co. ..... 243 Singer Street, Lewisburg, Ohio
Livingston Wood Manufacturing, Ltd. ..... Tillsonburg, Ontario, Canada
Love Mfg., Inc. ..... 608 South Commerce Street, Wichita, Kansas
Pennsylvania Box & Lumber Co. ..... Terwood Road, Willow Grove, Pa.
Utility Crate Corporation ..... 1985 E. 16th Street, Los Angeles 21, Calif.

—an inquiry to any of these companies will get prompt attention

The · WATKINS CONTAINER · Manufacturers

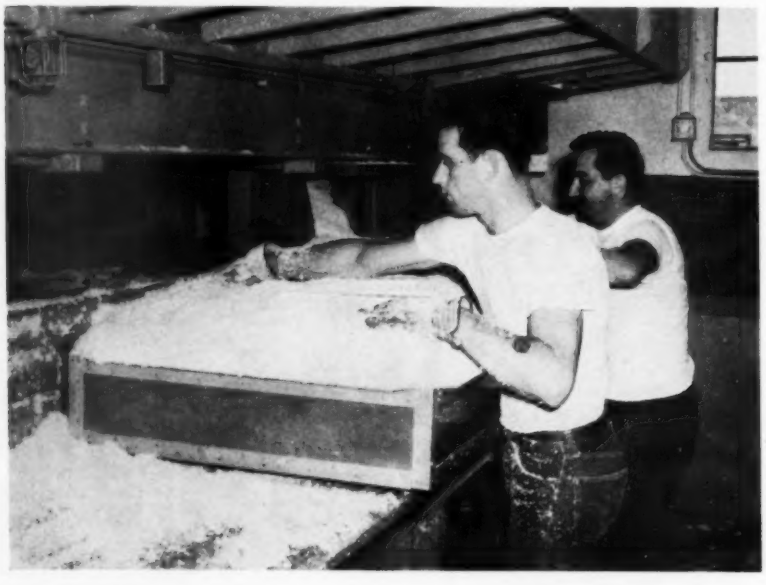
Foam rubber packaging materials help reduce in-transit losses

by Gilbert C. Close • WESTERN EDITOR

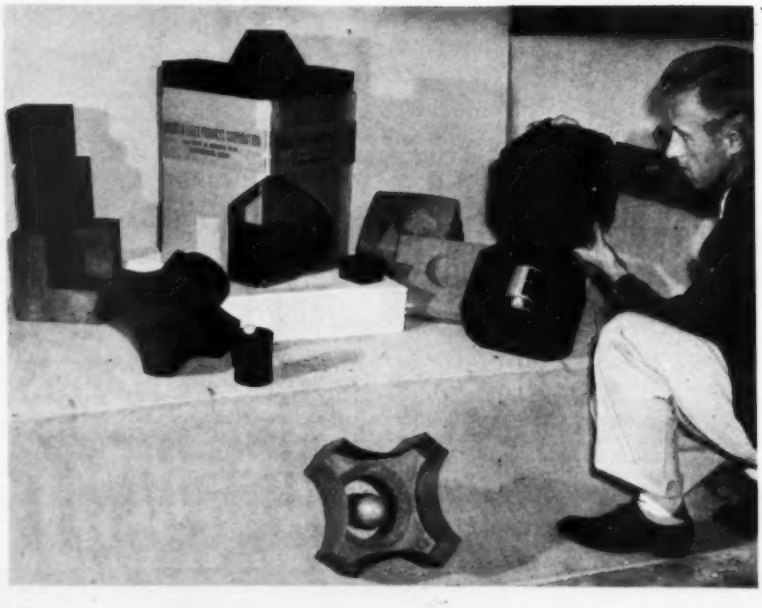
PRE-FORMED foam rubber packages, packaging units, and foam rubber slabs that can be band-saw cut into any desired shape and used to cushion a package, are rolling off the production line at American Latex Products Corp., Hawthorne, Calif., to aid and improve the safe transit picture. What makes this facet of American Latex production impressive is that it is entirely a salvage operation.

As one of the nation's largest producers of foam rubber mattresses and foam rubber products for the furniture and aircratt industries, it is only natural that a large amount of scrap and waste originates along the production line. This scrap and waste is gathered, then ground to coarse sawdust size in a hammer mill. It is then blown through a pipe into a huge hopper where it is mixed with raw liquid latex which acts as the ultimate bonding agent.

The latex-foam rubber mixture is then fed through a spout directly into a mold conforming to the shape of the desired package, packaging unit, or slab. Density of the final product is controlled by the degree of packing in the mold. This density can be varied between about 7 and 40 lbs. per sq. ft., and depends upon the weight of the product to be packaged. The mold then goes into an oven where the mixture is "cured" at 240°F. into a solid mass. The net result is a foam rubber (called Moldtex") package, packaging unit, or slab which can be cut into any desired shape for package cushioning, which will absorb the utmost in shock or bumping without transmitting the force of the blow to the packaged product.



← *Photo No. 1* shows a large mold being filled with the latex-saturated, finely ground foam rubber, to produce a large slab which later is band-sawed into the desirable size and shape.



← *Photo No. 2* shows several preformed Moldtex packages for high-cost and delicate aircraft products. The round package with the protruding splines (the mold used to produce it is shown in foreground), and the package being demonstrated, are used for packaging and shipping delicate accelerometer units; the square package visible in the background (center) is used for packaging and shipping vulnerable aircraft radar sensor units.

The cubical cut-out crate or package corner blocks shown at the far left and installed in the cut-away package have proved to be one of the company's most widely used packaging products. With these corner blocks, one crate or box may be literally "floated" on foam rubber within an exterior crate or package.

to Page ST-14 →

"I Don't Take Chances on Shipping Containers!

"I Always Order

SHIPPING TRADE SUPERSTRONG MARK CONTAINERS
REG. U.S. PAT. OFF.

Some shipping containers are satisfactory—there are others which are not. You can be certain of obtaining well made and dependable boxes and crates if you specify SUPERSTRONG.

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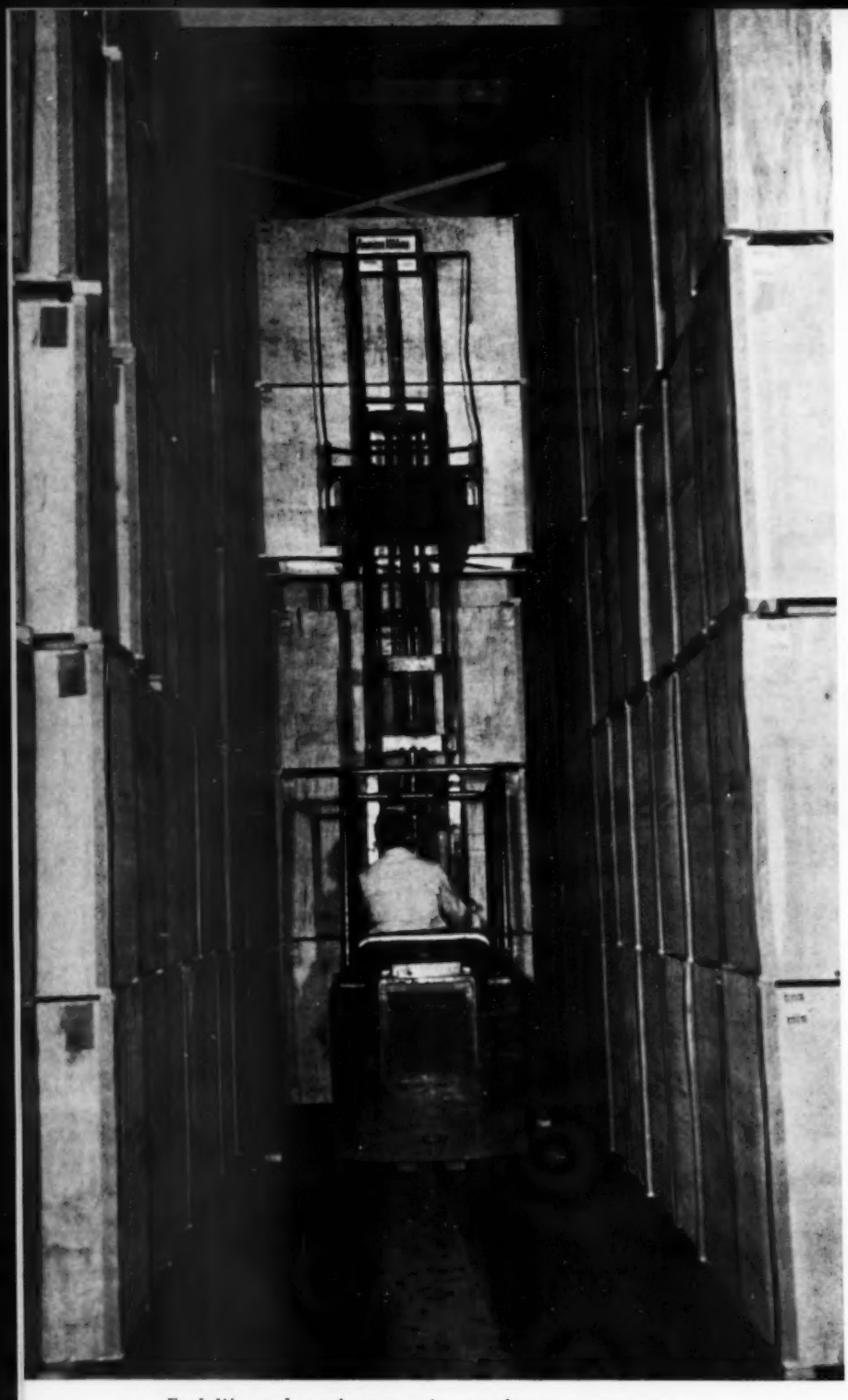
1855 - 1955
100
SUPERSTRONG

RATHBORNE, HAIR AND RIDGWAY BOX CO.
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS



Fork lift truck carries two units at a time to storage area.

Packaging an

including a brief description

by W. M. Cordell

safe transit

Proper packaging materials and methods have always been considered one of the key links in production operations at American Kitchens. Therefore, we just naturally look into new avenues of approach to the problem of adequate but economical packaging for our products.

When the National Safe Transit Program was begun, we were among the first companies to install NST testing equipment. And for four years now, packaged American Kitchens products have prominently displayed the Safe Transit Label as evidence that we have performed the pre-shipment tests necessary to insure delivery of our products in first class condition.

NST tests help reduce costs

Packaging material and labor costs have been reduced in many instances by the use of NST testing equipment. We also use this equipment to prove out product design as well as container design.

In addition to NST tests, all proposed packaging materials are subjected to a compression test whereby packaged products are stacked in one tier to the limitation of our warehouse ceiling. This test of six weeks duration is used to determine the effects of ever-changing humidity conditions on packaging components under such compression.

Field test shipments

All proposed new packaged products are subjected to field test shipments. Six different trucklines handle the shipments twice — once enroute to Kansas City, and again on the trip back to Connersville. Back at our plant the packaging engineer and a quality control representative open the package to see how the contents and packaging components fared.

After passing all tests, our Cost Reduction Program Committee then reviews the proposed packages and passes judgment on whether the package should be adopted.

andling at American Kitchens

kage research and testing and a report on packaging sink units

illustrated with finishfotos

AGING ENGINEER, AMERICAN KITCHENS DIVISION, AVCO MANUFACTURING CORPORATION
NERSVILLE, INDIANA; AS TOLD TO *Matt E. Heuertz* • ASSOCIATE EDITOR

Corner pads are inserted to maintain a 3/4" clearance between sink and shipping container.

Application of the Safe Transit Label which has appeared on American Kitchens packaged products for over four years.

Adopt new package for sink units

An example of the results of some of our recent research work, conducted in conjunction with one of our suppliers, is the new container for our sink units. In order to take advantage of the benefits of shipping in carload lots, we changed to a new crate, without exterior cleats, which permits us to load four wide in a boxcar—instead of three wide permitted with the type of container previously used. An added savings was found in the elimination of stripping between rows in boxcars and trucks and false bulkheads between the crated sink units and other products in different types of containers.

The new container is a type of plywood crate composed of only three components — base skid, top and the tube. The tube comprises the four sides of the box, joined together at the seams by tough fibreboard strips which are firmly stapled to the plywood sides.

Packaging operations

To see how this crate fits into our packaging operation, let's take a quick trip down the packaging line.

Packaging operations are per-

After the container tube is dropped in position, the unit moves down the conveyor to this station where a hydraulic lift raises the unit to a convenient height which permits two workers to speedily staple the container tube to the shipping frame base.

formed on a continuation of our sink unit assembly line. Riding down the waist-high conveyor line on a wood crate frame bolted to the base, the first operations consist of taping the cabinet doors shut. A strip of non-staining tape is placed around the edge of the sink to protect the surface edges from possible abrasion. Then the sink is lowered into position.

Corrugated shelf pads, with a wax finish, are inserted between shelving and the cabinet, and more pads are placed between the doors and cabinet frame to help dissipate vibration occuring during transit.

Stapling operation aided by hydraulic lift

The container tube is dropped over the unit which then moves onto a hydraulic lift for raising the unit to a height which conveniently permits two workers to secure the tube to all four sides of the container base with the aid of pneumatic stapling guns.

The unit is then lowered to the conveyor line for final packaging operations. Corner pads are folded and inserted in position to maintain a minimum of ¾" clearance between the sink unit and the shipping container. Next the container lid, with cleats around the perimeter, is dropped in position and stapled to the container tube.

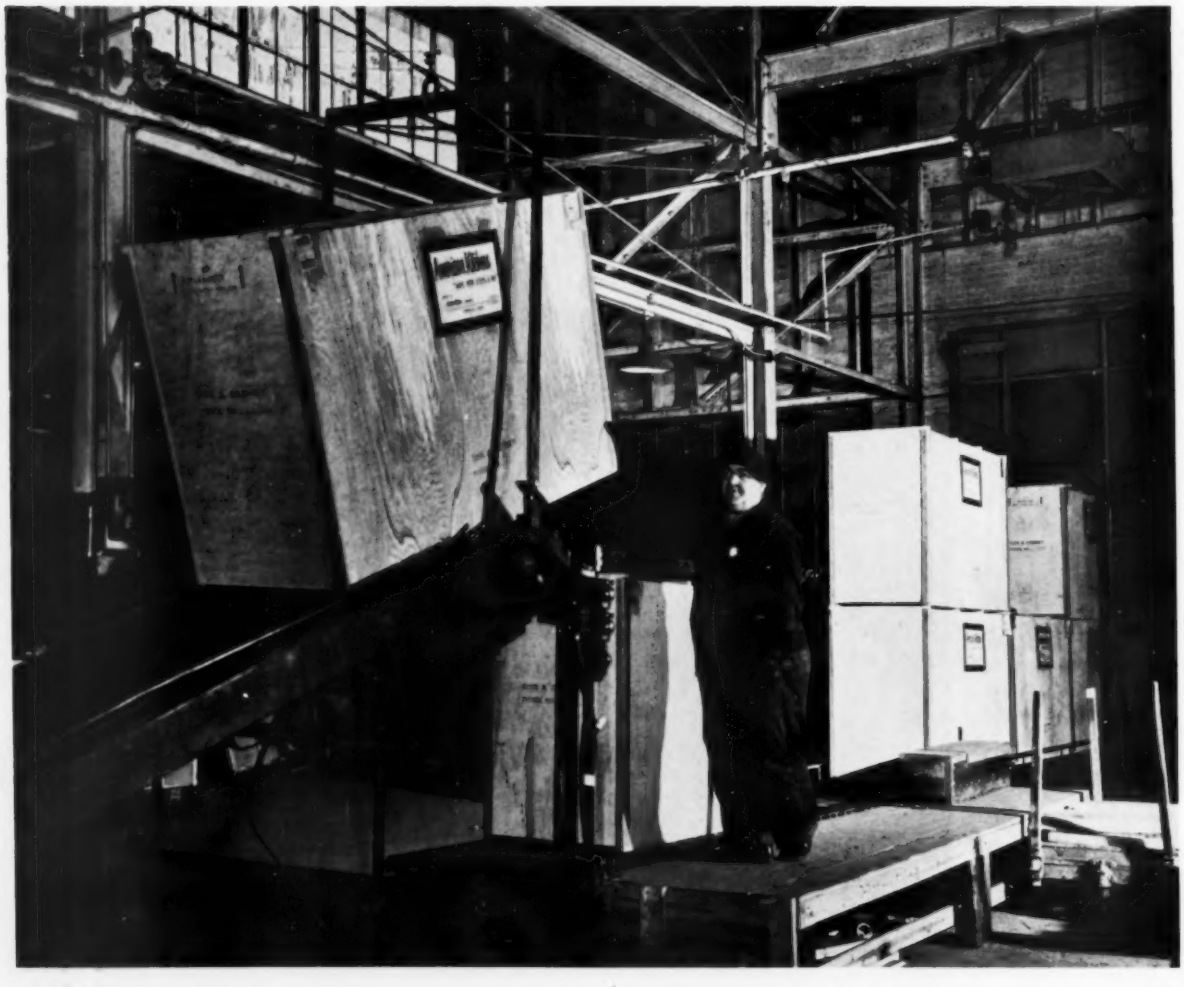
After the Safe Transit Label and American Kitchens logo are glued to the container, the packaged unit moves onto a belt-type conveyor leading to the warehouse area where packaged sink units are trucked (two high) to either storage or to the loading dock.

Hydraulic device helps deck crated kitchen sink units

To position one packaged product on top of another, we installed a hydraulic device in the belt conveyor line which inclines the conveyor upward to a position where each second sink unit can be rolled onto a short length of roller conveyor from which it is transferred to and decked on the packaged unit immediately below.

From here the two packaged units go by gravity conveyor to a station where a lift truck removes them from the line. In the warehouse, we can stack these sink units, which weigh up to 220 pounds, five high, and could safely stack them 10 high.

As each second unit reaches this point, a hydraulic device elevates section of belt conveyor to facilitate decking one crated unit on top of another.



"Our new containers cut freight costs 30%"

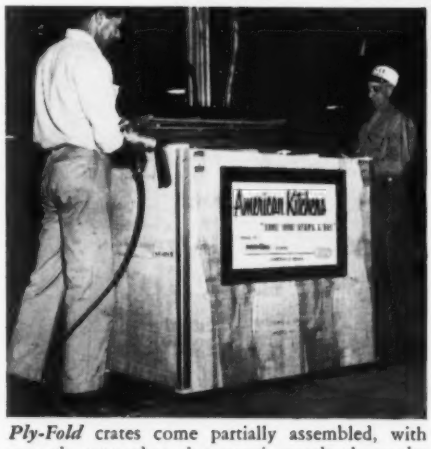
says Curry W. Stoup, American Kitchens' General Manager

"We knew that the *shipping package* was the key to our *shipping costs*," continued Mr. Stoup.

"So we asked Atlas Plywood to help us. They developed a lab-tested Ply-Fold crate that enabled us to pack more units to a car — enough to cut freight costs by 30%. Naturally I'm a booster for their Ply-Fold crates.

"Atlas Plywood's lab-testing methods give us other big savings, too. The new containers are stronger, so our kitchen cabinets, sinks, and dishwashers carry better. They are easier to assemble and are better all around. This is good for the customer — for our products — and the company profits. Everybody gets more for his money."

"***Kitchen beauty***" is what American Kitchens make — and what American housewives buy. Beautiful sink units like this are safely packed in Atlas Plywood Ply-Fold crates . . . can't move inside . . . stack better with more units to the car.



Ply-Fold crates come partially assembled, with smooth outer edges that permit speedy closure by air tackers. With these smooth sides there's no way for one case to damage another — a big advantage in both shipping and storing.

FREE Booklet! New, illustrated 24-page booklet, "How Atlas Plywood Cuts Your Shipping Costs . . . Safely," may help you avoid needless product damage or too-high freight costs. Write — or see your Atlas Plywood representative (see Yellow Pages). Learn about the laboratory where Atlas Plywood containers win their lab-tested label. Atlas Plywood Corporation, Dept. F-11, 1432 Statler Building, Boston 16, Mass.

Atlas Plywood

CORPORATION

FROM AMERICAN FOREST TO FINISHED PRODUCT

PLYWOOD CONTAINERS • FLUSH DOORS • HARDWOOD PANELS

Foam rubber packaging material helps reduce in-transit losses

(Continued from page ST-8)

These Moldtex packages and packaging units have already proved their value. They are used by the U.S. Atomic Commission, the military, various aircraft companies, and many commercial concerns for the safe shipment of many delicate products.

Among the companies using these package containers are Hughes Aircraft, Librascope, Summers Gyroscope, Gilfillian Bros., Lockheed Aircraft, and Lyons Van & Storage, all companies which ship many delicate parts, or are responsible to the customer for any in-transit damage to a product.

Officials of American Latex are confident that their packaging material will go a long way in solving the safe transit problem for delicate, easy-to-damage products.

From the strictly industrial standpoint, production of Moldtex from production-line waste and scrap is a good lesson in efficient and lucrative salvage work—a lesson to which a number of industrial enterprises should pay heed.

FIBRE BOX ASSOCIATION HOLDS ANNUAL EXHIBIT

Representing the latest advancements and uses in fibre boxes and fibreboard, 84 entries in the 1955 Fibre Box Exhibit were displayed at the spring meeting of the Fibre Box Association held recently at the Edgewater Beach Hotel in Chicago.

The exhibit contained containers for packaging products all the way from heavy machinery and appliances to live shipment of poultry and pets, as well as displays covering new uses for fibreboard.

By bringing together the latest and best developments in the industry, the Association points out that the annual exhibit serves the following purposes: provides an opportunity for Association members to view the latest advances in the field, gives recognition to members who have developed new uses or have brought about conversion from other types of containers; and serves to stimulate advancement and further uses of fibreboard products.

Last year the fibre box industry shipped 82,788,500 sq. ft. of corrugated and solid fibreboard products with a value of $1,307,348,200. More than 15% of this total was used in the metal, metal products, furniture and household goods industries, according to Association figures.

Fifty-one per cent of the more than 12 million tons of paperboard produced in the United States was used in the manufacture of corrugated and solid fibre boxes and products.

***Some 8000 Palletainers**—recently started their journey from the Union Steel Products Co. plant in Albion, Michigan, to the Chevrolet (Parts and Service Division of GMC) plant in Flint, Michigan. The first four truck shipments (500 units each) of the new warehouse-type Palletainers are to be used in Chevrolet's rapidly expanding and modern concept of parts warehousing. The containers, 32" wide by 40" long and 28" high, have a capacity of 3,000 pounds each.*

GAYLORD MAN HEADS PURCHASING AGENTS ASSN.

A. W. Soell, director of purchases, Gaylord Container Corp., St. Louis, has been elected president of the National Association of Purchasing Agents. He succeeds G. W. Howard Ahl, general purchasing agent for Philip Morris, Inc., New York City.

Soell has been active in purchasing association affairs since he joined the St. Louis Association in 1940. He served in various capacities and held the office of president a few years ago, followed by a term as national director for the St. Louis Association.

"CAREFUL CAR HANDLING IS A MATTER OF SKILL'

Shippers will be interested in the following comment "from the desk of C. A. Naffziger" which appeared in a recent issue of *Perfect Shipping News*, a publication of the Association of American Railroads:

A MATTER OF SKILL

More than one-half of the claims paid by the railroads for loss and damage to freight result from overspeed impacts to cars. The situation is serious. More and more shippers and receivers are using the condition of their freight shipments at destination as a basis for future routing.

All industry has increased output. Railroad operations must be geared to the demands of present day conditions, and we too must increase production or fall by the wayside.

This improved service required switching with a minimum of delay; however, the myth that expeditious switching need be rough handling is an imaginary fable, not based on fact. It is our obligation and duty to handle freight without damage. Remember—

CAREFUL CAR HANDLING
IS
A MATTER OF SKILL

PACKAGING INSTITUTE HOLDS ONE-DAY CONFERENCE IN ST. LOUIS

More than 150 packaging people attended the *second* one-day St. Louis (Mo.) Packaging Conference, held under the auspices of the Packaging Institute, May 26, at the Hotel Statler. Walter C. George, director of research, Gaylord Container Corp., again acted as chairman.

C. W. Harper, manager of informative packaging and labeling division of Sears, Roebuck & Co., Chicago, held the attention of even non-merchandising members of the audience with his wealth of actual in-store packaging case histories and success stories.

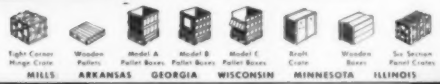
Robert de S. Couch, former president of the Packaging Institute, manager of carton and container division of General Foods Corp., Battle Creek, Mich., gave some personal observations on the *purchasing* aspects of packaging.

At a panel discussion on "Bulk Packaging", G. S. Macnair, of Acme Steel Co., Chicago, gave an illustrated talk on *bulk unitization*. Robert Rollins, of White-Rodgers Electric Co., St. Louis, discussed *bulk machinery*. Panel moderator was Merrill A. Becht, of Mark-Andy Co., Kirkwood, Mo.

Another seminar panel covered "Merchandising through Better Packaging", and was moderated by C. F. Schokmiller, plant manager, Grove Laboratories, Inc., Clayton, Mo. At this session, Philip McGrath, of Bemis Bro. Bag Co., St. Louis, covered the subject of *bags and overwraps*.

BIGELOW-GARVEY designs shipping crates for safe delivery of BATH TUBS

Engineered	To meet your specific requirements and to protect your product.
Pre-tested	In our own Certified N.S.T. Laboratory.
Safer	Exclusive B-G Tight Corner develops extra strength.
Economical	Factory assembled in 3 sections. Palletized for quicker handling and storage.
Time Saver	Hinged corners and pre-drilled nail holes for fast assembly.



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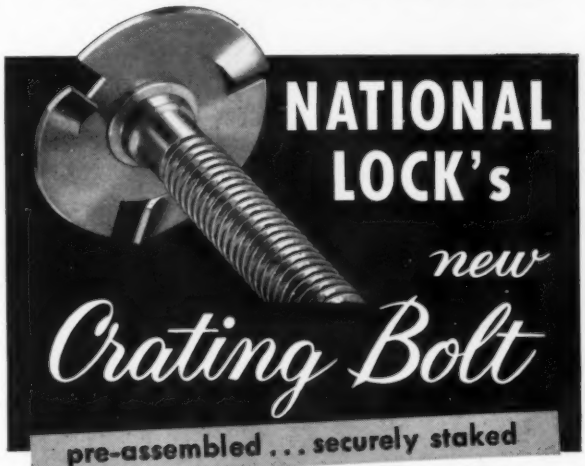


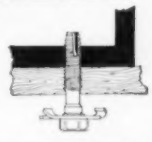
NATIONAL LOCK's new Crating Bolt

pre-assembled . . . securely staked

will not turn with vibration

● You reduce shipping damage . . . minimize enamel chippage . . . when your appliances are firmly secured to crates with the new National Lock crating bolt. Bolt is sturdily staked to specially-formed hardened spring steel washer. Washer lugs bite into the wood, preventing bolt from turning. Also available as a nut and washer staked assembly . . . with lugs to prevent loosening. (Leading manufacturers have proven that loosening torque is greater than tightening torque.) Put National Lock crating bolts to the test in *your* shipping room NOW.

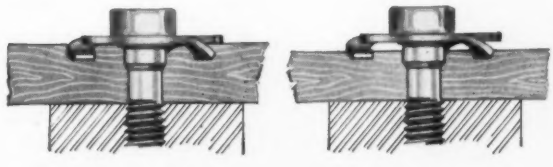
METAL THREAD-CUTTING FEATURE SAVES CRATING TIME, CUTS COSTS



Bolt is self-threading. Can be quickly and easily turned into metal foot or base of appliance. Nut is not required.

lugs will not let go...

BEFORE SHRINKAGE AFTER SHRINKAGE



Our sales engineers will submit samples and work with you in solving your crating problems. Remember National Lock Company for all your special fastener requirements.

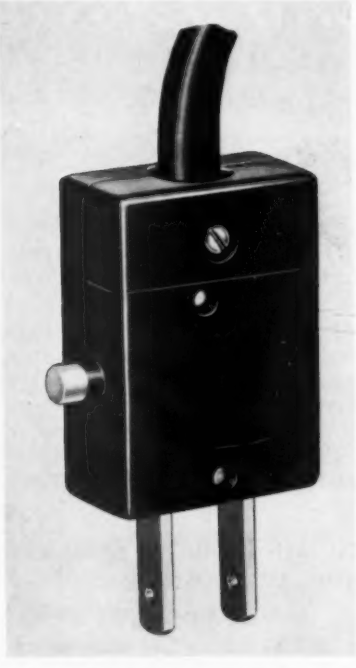
Write for full information and prices

NATIONAL LOCK COMPANY
Rockford • Illinois

New Supplies and Equipment

G-10. Cord-end circuit protector

New An extra margin of safety for electrical appliances is now available. It affords complete circuit protection for home appliances. It fits easily on the cord-end of washing machines, ironers, mixers, etc. — guards against damage due to overloads and short circuits.



It is designed to protect 3 to 10 ampere circuits. In case of an interruption, service can normally be restored within ten seconds by pressing the reset button . . . yet it is absolutely trip-free; will not maintain a circuit that has not been cleared. This same reset button warns the user (when tripping is persistent) that a service check-up is necessary.

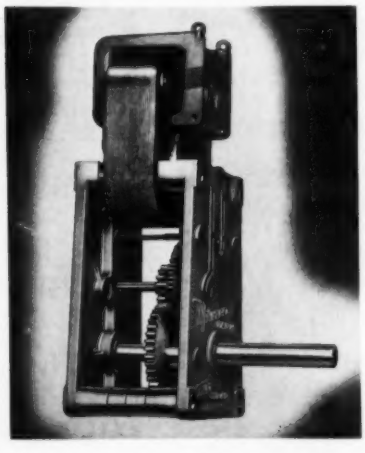
G-11. Super Gearmotor

New The AC Super Gearmotor has been developed for higher speeds and greater power required for actuating devices such as motion displays, vending machines, amusement games, coin operated machines, commercial broilers and large rotisseries.

More Information

For more information on new supplies, equipment and literature reviewed here, fill out the order form, or write to us on your company stationery.

The Super Gearmotor has high starting torque characteristics and can be provided to operate on either continuous or intermittent duty. Output is developed with more efficiency than generally available in motors of this size. Output torque is 120 to 500 inch ounces at 10 RPM depending on duty cycle. Output shaft can be geared to 3 RPM and up, and standard output shaft diameter is 3/16″ to 3/8″ cut to desired length, with other sizes available. Has long life semi-oilless bearings and ma-

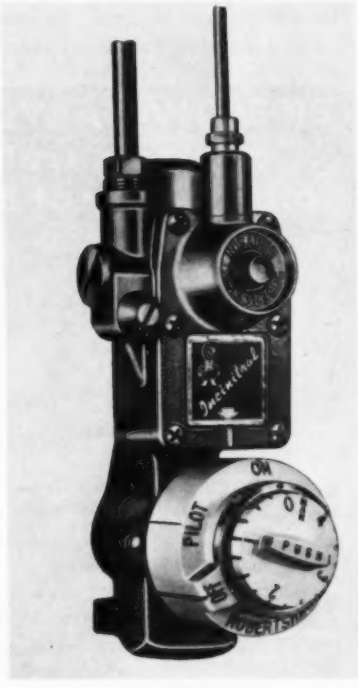


chine cut gears. Super Gearmotor length is 5½″, width 2-15/32″ and depth 1-9/16″. May be had with magnetic clutch to provide motion at output shaft only for interval there is electrical contact. With magnetic clutch depth is 1-11/16″. Operating voltage is 115 V with 60 cycle frequency as standard, also special voltages or frequencies as required. All motors built to customer's specifications.

G-12. Automatic control device for gas-fired home incinerators

New An automatic control device for one of the newest appliances, the home incinerator, has been developed. The new control is an all-in-one safety pilot, gas cock and automatic timing mechanism. The safety pilot, which automatically shuts off the gas supply in case the flame is extinguished, is equipped with a specially-constructed, three-foot internal filter, the company said.

Development of the device was prompted by increased demands from manufacturers of gas-fired incinerators, which in the last ten years have grown in number from five to well over thirty. Through active research and development programs, appliance manufacturers are designing incinerators of higher input, which consume refuse quickly and effectively and with a minimum of smoke and odor.



Once the incinerator is installed and the pilot lighted, users need only select the length of time for the burning period. The appliance will start automatically and shut off by itself. The new control is available in several models, designed to meet varied specifications.